SUBJECT INDEX

Accuracy
Accuracy of Estimated Reference Crop Evapotranspiration, George H. Hargreaves, IR Nov./Dec. 89, p1000-1007.

Africa
Problems and Potential of Irrigated Agriculture in Sub-Saharan Africa, Mahmood Alam, IR Mar./Apr. 91, p155-172.

Agricultural economics
Problems and Potential of Irrigated Agriculture in Sub-Saharan Africa, Mahmood Alam, IR Mar./Apr. 91, p155-172.

SECTAR for Economically Optimal, Sustained Ground-Water Yield Planning, R. C. Peralta, K. Asghari and R. Shulstad, IR Jan./Feb. 91, p5-24.

Agricultural engineering
Systems Analysis of Tank Irrigation: I. Crop Staggering, S. G. Mayya and Rama Prasad, IR May/June 89, p384-405.

Agricultural wastes
Agricultural Drainage Water—How Should it be Regulated in California? Stephen K. Hall, William R. Johnston and William J. Miller, IR Jan./Feb. 89, p3-8.

Air temperature
Accuracy of Estimated Reference Crop Evapotranspiration, George H. Hargreaves, IR Nov./Dec. 89, p1000-1007.

Analysis
Calculation of Distribution and Efficiency for Nonuniform Irrigation, A. W. Warrick, E. Hart and M. Yitayew, IR July/Aug. 89, p674-686.

Ditch Drainage in Layered Soils, H. C. Sharma, H. S. Chauhan, P. N. Kapoor and Sewa Ram, IR Mar./Apr. 91, p184-200.

Analytical techniques
Simple Methods for Predicting Flow to Drains, G. Fipps and R. W. Skaggs, IR Nov./Dec. 91, p881-896.

Aquifers
Drainage of Clay Overlying Artesian Aquifer. I: Hydrologic Assessment, M. E. Grismer and I. C. Tod, IR Mar./Apr. 91, p255-270.

Drainage of Clay Overlying Artesian Aquifer. II: Technical Analysis, I. C. Tod and M. E. Grismer, IR Mar./Apr. 91, p271-284.

Vertical Leakage in Egypt's Nile Valley: Estimation and Implications, James W. Warner, Timothy K. Gates, Fatma A. R. Attia and Wadie F. Mankarious, IR July/Aug. 91, p515-533.

Automation
Centralized Scheduling Logic for Canal Operation, G. P. Merkley and W. R. Walker, IR May/June 91, p377-393.

Backwater
Backwater Curves in Circular Channels, Willi H. Hager, IR Mar./Apr. 91, p173-183.

Baffles
Development of Low-Discharge Baffle-Sluice Modules, P. K. Mishra, P. Larsen and T. Satyanarayana, IR May/June 90, p444-453.

Balancing
Hydrologic Balance Model Using Neutron Probe Data, Richard H. Cuenca, IR Nov. 88, p644-663.

Bentonite
Setting Time Effects on Bentonite Water-Well Annulus Seals, Fred L. Ogden and James F. Ruff, IR July/Aug. 91, p534-545.

Calibration
Accuracy of Estimated Reference Crop Evapotranspiration, George H. Hargreaves, IR Nov./Dec. 89, p1000-1007.

California
Agricultural Drainage Water—How Should it be Regulated in California? Stephen K. Hall, William R. Johnston and William J. Miller, IR Jan./Feb. 89, p3-8.

Canal design
Optimal Design of Parabolic Canals, G. V. Loganathan, IR Sept./Oct. 91, p716-735.

Canals
Centralized Scheduling Logic for Canal Operation, G. P. Merkley and W. R. Walker, IR May/June 91, p377-393.

Design of Irrigation Canals: Integrated Approach, Emad H. Imam, Abdallah S. Bazaraa and Ashraf S. Zaghlool, IR Nov./Dec. 91, p852-869.

Design of Rectangular Open-Channel Expansive Transitions, Prabhata K. Swamee and Bharat C. Basak, IR Nov./Dec. 91, p827-838.

Optimal Design of Parabolic Canals, G. V. Loganathan, IR Sept./Oct. 91, p716-735.

Projectwide Water-Order Scheduling by Computer, Brian J. Boman and Charles Higgins, IR May/June 91, p394-407.

Channels, waterways
Design Procedure for Flow Over Side Weirs, Ali Uyumaz and Roger H. Smith, IR Jan./Feb. 91, p79-90.

Normal-Depth Calculations in Complex Channel Sections, Edward D. Shirley and Vicente L. Lopes, IR Mar./Apr. 91, p220-232.

Optimal Spacing of Tube Wells in Relation to Channel Losses and Lining, Bimal Chandra Mal, IR Sept./Oct. 91, p791-799.

Characteristics
Local Scour Downstream of Box-Culvert Outlets, H. Abida and R. D. Townsend, IR May/June 91, p425-440.

Clays
Drainage of Clay Overlying Artesian Aquifer. I: Hydrologic Assessment, M. E. Grismer and I. C. Tod, IR Mar./Apr. 91, p255-270.

Drainage of Clay Overlying Artesian Aquifer. II: Technical Analysis, I. C. Tod and M. E. Grismer, IR Mar./Apr. 91, p271-284.

Setting Time Effects on Bentonite Water-Well Annulus Seals, Fred L. Ogden and James F. Ruff, IR July/Aug. 91, p534-545.

Climatic changes

Accuracy of Estimated Reference Crop Evapotranspiration, George H. Hargreaves, IR Nov./Dec. 89, p1000-1007.

Climatic data

Evapotranspiration Estimation for Data-Short Environment, Sun F. Shih and Ke S. Cheng, IR Jan./Feb. 91, p107-122.

Sensitivity of Reservoir Sizing to Evaporation Estimates, K. C. Gan, T. A. McMahon and I. C. O'Neill, IR May/June 91, p324-335.

Climatology

FAO-24 Reference Evapotranspiration Factors, Richard G. Allen and William O. Pruitt, IR Sept./Oct. 91, p758-773.

Simulation Models of Sequences of Dry and Wet Days, J. W. Delleur, T. J. Chang and M. L. Kavvas, IR May/June 89, p344-357.

Clogging

Dripper-Clogging Factors in Wastewater Irrigation, Avner Adin and Mollie Sacks, IR Nov./Dec. 91, p813-826.

Closed conduits

Methods of Measuring Pumpage Through Closed-Conduit Irrigation Systems, L. C. Kjelstrom, IR Sept./Oct. 91, p748-757.

Coastal plains

Drainage-Subirrigation Effect on Water Quality in Georgia Flatwoods, D. L. Thomas, A. Shirmohammadi, R. R. Lowrance and M. C. Smith, IR Jan./Feb. 91, p123-137.

Colorado

Multicriterion Strategic Planning for Improved Irrigation Delivery. II: Application, Walter E. Heyder, Timothy K. Gates, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p914-934.

Computer applications

Simple Methods for Predicting Flow to Drains, G. Fipps and R. W. Skaggs, IR Nov./Dec. 91, p881-896.

Computer programs

Application of Least-Squares Land Leveling, N. A. Gebre-Selassie and L. S. Willardson, IR Nov./Dec. 91, p962-966.

Dynamic-Node-Numbering Concept in Channel Network Model, Tahir Husain, Hasin U. Khan and Suhail M. Khan, IR Jan./Feb. 91, p48-63.

Projectwide Water-Order Scheduling by Computer, Brian J. Boman and Charles Higgins, IR May/June 91, p394-407.

Computer software

Interactive Computer-Aided Design of Inverted Siphons, Pravi Shrestha and Johannes J. DeVries, IR Mar./Apr. 91, p233-254.

Normal-Depth Calculations in Complex Channel Sections, Edward D. Shirley and Vicente L. Lopes, IR Mar./Apr. 91, p220-232.

Computerized design

Interactive Computer-Aided Design of Inverted Siphons, Pravi Shrestha and Johannes J. DeVries, IR Mar./Apr. 91, p233-254.

Concentration time

Fractal Concept Used in Time-of-Concentration Estimates, Gert Aron, James E. Ball and Thomas A. Smith, IR Sept./Oct. 91, p635-641.

Conditional probability

Investigation of Precipitation Droughts by Use of Kriging Method, Tiao J. Chang, IR Nov./Dec. 91, p935-943.

Cost effectiveness

Practical Two-Stage Pipe Expansions for Centrifugal Pumps, Walter L. Trimmer and John A. Fazio, IR Jan./Feb. 91, p91-106.

Cost minimization

Design of Irrigation Canals: Integrated Approach, Emad H. Imam, Abdallah S. Bazaraa and Ashraf S. Zaghlool, IR Nov./Dec. 91, p852-869.

Costs

Problems and Potential of Irrigated Agriculture in Sub-Saharan Africa, Mahmood Alam, IR Mar./Apr. 91, p155-172.

Crop moisture index

Hydrologic Balance Model Using Neutron Probe Data, Richard H. Cuenca, IR Nov. 88, p644-663.

Crop production

Simulation of Supplemental Irrigation from On-Farm Ponds, J. G. Arnold and C. O. Stockle, IR May/June 91, p408-424.

Systems Analysis of Tank Irrigation: I. Crop Staggering, S. G. Mayya and Rama Prasad, IR May/June 89, p384-405.

Crop yield

Effects of Deficit Irrigation and Irrigation Frequency on Wheat Yields, Marshall English and Brian Nakamura, IR Mar./Apr. 89, p172-184.

SECTAR for Economically Optimal, Sustained Ground-Water Yield Planning, R. C. Peralta, K. Asghari and R. Shulstad, IR Jan./Feb. 91, p5-24.

Subsurface Microirrigation with Effluent, Gideon Oron, Joel DeMalach, Zafrir Hoffman and Rodica Cibotaru, IR Jan./Feb. 91, p25-36.

Crops

FAO-24 Reference Evapotranspiration Factors, Richard G. Allen and William O. Pruitt, IR Sept./Oct. 91, p758-773.

Subsurface Microirrigation with Effluent, Gideon Oron, Joel DeMalach, Zafrir Hoffman and Rodica Cibotaru, IR Jan./Feb. 91, p25-36.

Culverts

Local Scour Downstream of Box-Culvert Outlets, H. Abida and R. D. Townsend, IR May/June 91, p425-440.

Curricula

DSS: Dam Site Selector Expert System for Education, Bernard A. Engel and David B. Beasley, IR Sept./Oct. 91, p774-782.

Dam site selection

DSS: Dam Site Selector Expert System for Education, Bernard A. Engel and David B. Beasley, IR Sept./Oct. 91, p774-782.

Damage

Testing of Soil Moisture Prediction Model for Army Land Managers, J. R. Davis, S. M. Cuddy, P. Laut, M. J. Goodspeed and P. A. Whigham, IR July/Aug. 91, p476-489.

Dams

DSS: Dam Site Selector Expert System for Education, Bernard A. Engel and David B. Beasley, IR Sept./Oct. 91, p774-782.

Darcy's law

Nonlinear Steady State Seepage into Drains, Salihu Mustafa and N. A. Rafindadi, IR May/June 89, p358-376.

Data extraction

Evapotranspiration Estimation for Data-Short Environment, Sun F. Shih and Ke S. Cheng, IR Jan./Feb. 91, p107-122.

Decision making

Irrigation Uniformity Relationships for Irrigation System Management, Albert J. Clemmens, IR Sept./Oct. 91, p682-699.

Multicriterion Strategic Planning for Improved Irrigation Delivery. I: Approach, Timothy K. Gates, Walter E. Heyder, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p897-913.

Multicriterion Strategic Planning for Improved Irrigation Delivery. II: Application, Walter E. Heyder, Timothy K. Gates, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p914-934.

Delivery

Field Study on Irrigation Delivery Performance, Joel D. Palmer, Albert J. Clemmens and Allen R. Dedrick, IR July/Aug. 91, p567-577.

Depth

Critical Depth, Velocity Profile, and Channel Shape, R. J. Heggen, IR May/June 91, p442-448.

Normal-Depth Calculations in Complex Channel Sections, Edward D. Shirley and Vicente L. Lopes, IR Mar./Apr. 91, p220-232.

Design

Design of Hydraulic Jump Chambers, Scott F. Korom, Simsek Sarikelle and Andrew L. Simon, IR Mar./Apr. 90, p143-153.

Design of Irrigation Canals: Integrated Approach, Emad H. Imam, Abdallah S. Bazaraa and Ashraf S. Zaghlool, IR Nov./Dec. 91, p852-869.

Design of Rectangular Open-Channel Expansive Transitions, Prabhata K. Swamee and Bharat C. Basak, IR Nov./Dec. 91, p827-838.

Kriging of Hydraulic Conductivity for Subsurface Drainage Design, J. Gallichand, S. O. Prasher, R. S. Broughton and D. Marcotte, IR Sept./Oct. 91, p667-681.

Simple Methods for Predicting Flow to Drains, G. Fipps and R. W. Skaggs, IR Nov./Dec. 91, p881-896.

Design criteria

Interactive Computer-Aided Design of Inverted Siphons, Pravi Shrestha and Johannes J. DeVries, IR Mar./Apr. 91, p233-254.

Discharge

Alternative Linear Weir Design, Prabhata K. Swamee, Santosh K. Pathak, Mahesh Agarwal and Anwar S. Ansari, IR May/June 91, p311-323.

Correction to Parshall Flume Calibrations at Low Discharges, Steven J. Wright and Bahram Taheri, IR Sept./Oct. 91, p800-804.

Design Procedure for Flow Over Side Weirs, Ali Uyumaz and Roger H. Smith, IR Jan./Feb. 91, p79-90.

Discharge coefficients

Alternative Linear Weir Design, Prabhata K. Swamee, Santosh K. Pathak, Mahesh Agarwal and Anwar S. Ansari, IR May/June 91, p311-323.

Design Procedure for Flow Over Side Weirs, Ali Uyumaz and Roger H. Smith, IR Jan./Feb. 91, p79-90.

Discharge Coefficient of Lateral Diversion from Trapezoidal Channel, Hin-Fatt Cheong, IR July/Aug. 91, p461-475.

Discharge measurement

Correction to Parshall Flume Calibrations at Low Discharges, Steven J. Wright and Bahram Taheri, IR Sept./Oct. 91, p800-804.

Distribution patterns

Simulation of Wind-Distorted Sprinkler Patterns, Ido Seginer, Dov Nir and R. D. von Bernuth, IR Mar./Apr. 91, p285-306.

Ditches

Numerical Modeling of Two-Dimensional Transient Flow to Ditches, Saleem Ahmad, Deepak Kashyap and B. S. Mathur, IR Nov./Dec. 91, p839-851.

Drag coefficient

Simulation of Wind-Distorted Sprinkler Patterns, Ido Seginer, Dov Nir and R. D. von Bernuth, IR Mar./Apr. 91, p285-306.

Drainage

Agricultural Drainage Water—How Should it be Regulated in California? Stephen K. Hall, William R. Johnston and William J. Miller, IR Jan./Feb. 89, p3-8.

Drainage of Clay Overlying Artesian Aquifer. I: Hydrologic Assessment, M. E. Grismer and I. C. Tod, IR Mar./Apr. 91, p255-270.

Drainage of Clay Overlying Artesian Aquifer. II: Technical Analysis, I. C. Tod and M. E. Grismer, IR Mar./Apr. 91, p271-284.

Drainage-Subirrigation Effect on Water Quality in Georgia Flatwoods, D. L. Thomas, A. Shirmohammadi, R. R. Lowrance and M. C. Smith, IR Jan./Feb. 91, p123-137.

On the Correspondence Between Brooks-Corey and Van Genuchten Models, R. J. Lenhard, J. C. Parker and S. Mishra, IR July/Aug. 89, p744-751.

Overseas Perspectives for Managing Irrigation Drainage in California, Emery M. Roe, IR May/June 91, p350-360.

Simple Methods for Predicting Flow to Drains, G. Fipps and R. W. Skaggs, IR Nov./Dec. 91, p881-896.

Vertical Leakage in Egypt's Nile Valley: Estimation and Implications, James W. Warner, Timothy K. Gates, Fatma A. R. Attia and Wadie F. Mankarious, IR July/Aug. 91, p515-533.

Drainage systems

Drop Manholes in Supercritical Pipelines, George C. Christodoulou, IR Jan./Feb. 91, p37-47.

Nonlinear Steady State Seepage into Drains, Salihu Mustafa and N. A. Rafindadi, IR May/June 89, p358-376.

Drains

Backwater Curves in Circular Channels, Willi H. Hager, IR Mar./Apr. 91, p173-183.

Nonlinear Steady State Seepage into Drains, Salihu Mustafa and N. A. Rafindadi, IR May/June 89, p358-376.

Droughts

Investigation of Precipitation Droughts by Use of Kriging Method, Tiao J. Chang, IR Nov./Dec. 91, p935-943.

Simulation Models of Sequences of Dry and Wet Days, J. W. Delleur, T. J. Chang and M. L. Kavvas, IR May/June 89, p344-357.

Earthmoving

Salt Movement Under Level-Basin Irrigation, D. F. Champion, E. G. Kruse, S. R. Olsen and D. C. Kincaid, IR Sept./Oct. 91, p642-655.

Earthwork

Application of Least-Squares Land Leveling, N. A. Gebre-Selassie and L. S. Willardson, IR Nov./Dec. 91, p962-966.

Economic analysis

Optimal Design of Parabolic Canals, G. V. Loganathan, IR Sept./Oct. 91, p716-735.

Economics

Simulation of Supplemental Irrigation from On-Farm Ponds, J. G. Arnold and C. O. Stockle, IR May/June 91, p408-424.

Effluents

Subsurface Microirrigation with Effluent, Gideon Oron, Joel DeMalach, Zafrir Hoffman and Rodica Cibotaru, IR Jan./Feb. 91, p25-36.

Egypt

Irrigation of Small-Level Basins in Egypt, Wadie F. Mankarious, Timothy K. Gates and Mohamed A. -H. Rady, IR May/June 91, p361-376.

Energy

Practical Two-Stage Pipe Expansions for Centrifugal Pumps, Walter L. Trimmer and John A. Fazio, IR Jan./Feb. 91, p91-106.

Systems Analysis of Tank Irrigation: I. Crop Staggering, S. G. Mayya and Rama Prasad, IR May/June 89, p384-405.

Energy losses

Drop Manholes in Supercritical Pipelines, George C. Christodoulou, IR Jan./Feb. 91, p37-47.

Engineering education

DSS: Dam Site Selector Expert System for Education, Bernard A. Engel and David B. Beasley, IR Sept./Oct. 91, p774-782.

Estimation

Accuracy of Estimated Reference Crop Evapotranspiration, George H. Hargreaves, IR Nov./Dec. 89, p1000-1007.

Direct Solution to Surface Irrigation Advance Inverse Problem, Albert J. Clemmens, IR July/Aug. 91, p578-594.

Importance of Demand Estimation in Irrigation-System Management, Numan Mizyed, Jim Loftis, Ramchand Oad and Alan Early, IR May/June 91, p336-349.

Evaporation

Accuracy of Estimated Reference Crop Evapotranspiration, George H. Hargreaves, IR Nov./Dec. 89, p1000-1007.

NOAA Polar-Orbiting Satellite APT Data in Lake Evaporation Estimation, Jian-Nong Xin and Sun F. Shih, IR July/Aug. 91, p547-557.

Prediction of Class A Pan Evaporation in Southwest Idaho, Clayton L. Hanson, IR Mar./Apr. 89, p166-171.

Sensitivity of Reservoir Sizing to Evaporation Estimates, K. C. Gan, T. A. McMahon and I. C. O'Neill, IR May/June 91, p324-335.

Evapotranspiration

Accuracy of Estimated Reference Crop Evapotranspiration, George H. Hargreaves, IR Nov./Dec. 89, p1000-1007.

Evapotranspiration Estimation for Data-Short Environment, Sun F. Shih and Ke S. Cheng, IR Jan./Feb. 91, p107-122.

FAO-24 Reference Evapotranspiration Factors, Richard G. Allen and William O. Pruitt, IR Sept./Oct. 91, p758-773.

Hydrologic Balance Model Using Neutron Probe Data, Richard H. Cuenca, IR Nov. 88, p644-663.

Irrigation in Midwest: Lessons from Illinois, Jean A. Bowman, F. William Simmons and Brian C. Kimpel, IR Sept./Oct. 91, p700-715.

Expansion

Practical Two-Stage Pipe Expansions for Centrifugal Pumps, Walter L. Trimmer and John A. Fazio, IR Jan./Feb. 91, p91-106.

Expert systems

DSS: Dam Site Selector Expert System for Education, Bernard A. Engel and David B. Beasley, IR Sept./Oct. 91, p774-782.

Testing of Soil Moisture Prediction Model for Army Land Managers, J. R. Davis, S. M. Cuddy, P. Laut, M. J. Goodspeed and P. A. Whigham, IR July/Aug. 91, p476-489.

Farm management

Development of Low-Discharge Baffle-Sluice Modules, P. K. Mishra, P. Larsen and T. Satyanarayana, IR May/June 90, p444-453.

Farms

Development of Low-Discharge Baffle-Sluice Modules, P. K. Mishra, P. Larsen and T. Satyanarayana, IR May/June 90, p444-453.

Irrigation of Small-Level Basins in Egypt, Wadie F. Mankarious, Timothy K. Gates and Mohamed A. -H. Rady, IR May/June 91, p361-376.

Field investigations

Field Study on Irrigation Delivery Performance, Joel D. Palmer, Albert J. Clemmens and Allen R. Dedrick, IR July/Aug. 91, p567-577.

Irrigation of Small-Level Basins in Egypt, Wadie F. Mankarious, Timothy K. Gates and Mohamed A. -H. Rady, IR May/June 91, p361-376.

Field tests

Effects of Deficit Irrigation and Irrigation Frequency on Wheat Yields, Marshall English and Brian Nakamura, IR Mar./Apr. 89, p172-184.

Finite differences

Numerical Modeling of Two-Dimensional Transient Flow to Ditches, Saleem Ahmad, Deepak Kashyap and B. S. Mathur, IR Nov./Dec. 91, p839-851.

Flood drainage

Roughness Values for Overland Flow in Subcatchments, S. Y. Liong, S. Selvalingam and D. K. Brady, IR Mar./Apr. 89, p203-214.

Floods

Simulation Models of Sequences of Dry and Wet Days, J. W. Delleur, T. J. Chang and M. L. Kavvas, IR May/June 89, p344-357.

Floors

Open Channel Flow Through Transverse Floor Outlets, A. S. Ramamurthy, Duc Minh Tran and L. B. Carballada, IR Mar./Apr. 89, p248-254.

Florida

Evapotranspiration Estimation for Data-Short Environment, Sun F. Shih and Ke S. Cheng, IR Jan./Feb. 91, p107-122.

NOAA Polar-Orbiting Satellite APT Data in Lake Evaporation Estimation, Jian-Nong Xin and Sun F. Shih, IR July/Aug. 91, p547-557.

Flow measurement

Alternative Linear Weir Design, Prabhata K. Swamee, Santosh K. Pathak, Mahesh Agarwal and Anwar S. Ansari, IR May/June 91, p311-323.

Correction to Parshall Flume Calibrations at Low Discharges, Steven J. Wright and Bahram Taheri, IR Sept./Oct. 91, p800-804.

Improved Inverted V-Notch or Chimney Weir, K. Keshava Murthy and D. P. Giridhar, IR May/June 90, p374-386.

Measurement of Irrigation Flows Through Irrigation Turnouts, Ian C. Tod, Mark E. Grismer and Wesley W. Wallender, IR July/Aug. 91, p596-599.

Flow rates

Correction to Parshall Flume Calibrations at Low Discharges, Steven J. Wright and Bahram Taheri, IR Sept./Oct. 91, p800-804.

Development of Low-Discharge Baffle-Sluice Modules, P. K. Mishra, P. Larsen and T. Satyanarayana, IR May/June 90, p444-453.

Hydraulic Characteristics of Circular Flume, Zohrab Samani, Saeed Jorat and Mohammed Yousaf, IR July/Aug. 91, p558-566.

Methods of Measuring Pumpage Through Closed-Conduit Irrigation Systems, L. C. Kjelstrom, IR Sept./Oct. 91, p748-757.

Simple Methods for Predicting Flow to Drains, G. Fipps and R. W. Skaggs, IR Nov./Dec. 91, p881-896.

Flumes

Correction to Parshall Flume Calibrations at Low Discharges, Steven J. Wright and Bahram Taheri, IR Sept./Oct. 91, p800-804.

Hydraulic Characteristics of Circular Flume, Zohrab Samani, Saeed Jorat and Mohammed Yousaf, IR July/Aug. 91, p558-566.

Froude number

Critical Depth, Velocity Profile, and Channel Shape, R. J. Heggen, IR May/June 91, p442-448.

Discharge Coefficient of Lateral Diversion from Trapezoidal Channel, Hin-Fatt Cheong, IR July/Aug. 91, p461-475.

Functional analysis

Infiltration Function from Furrow Stream Advance, William R. DeTar, IR July/Aug. 89, p722-730.

Furrow irrigation

Furrow Geometric Parameters, Thomas J. Trout, IR Sept./Oct. 91, p613-634.

Infiltration Function from Furrow Stream Advance, William R. DeTar, IR July/Aug. 89, p722-730.

Sensitivity of Furrow Irrigation System Cost and Design Variables, J. Mohan Reddy and Horacio M. Apolayo, IR Mar./Apr. 91, p201-219.

Space Solution of Kinematic-Wave Model by Time Iteration, W. W. Wallender and Junji Yokokura, IR Jan./Feb. 91, p140-144.

Gates

Centralized Scheduling Logic for Canal Operation, G. P. Merkley and W. R. Walker, IR May/June 91, p377-393.

Dynamic-Node-Numbering Concept in Channel Network Model, Tahir Husain, Hasin U. Khan and Suhail M. Khan, IR Jan./Feb. 91, p48-63.

Geographic information systems

Testing of Soil Moisture Prediction Model for Army Land Managers, J. R. Davis, S. M. Cuddy, P. Laut, M. J. Goodspeed and P. A. Whigham, IR July/Aug. 91, p476-489.

Geometry
Furrow Geometric Parameters, Thomas J. Trout, IR Sept./Oct. 91, p613-634.

Government agencies
Overseas Perspectives for Managing Irrigation Drainage in California, Emery M. Roe, IR May/June 91, p350-360.

Green-Ampt model
Precipitation Distributions and Green-Ampt Runoff, J. A. Van Mullem, IR Nov./Dec. 91, p944-959.

Ground water
Irrigation in Midwest: Lessons from Illinois, Jean A. Bowman, F. William Simmons and Brian C. Kimpel, IR Sept./Oct. 91, p700-715.

Optimal Spacing of Tube Wells in Relation to Channel Losses and Lining, Bimal Chandra Mal, IR Sept./Oct. 91, p791-799.

Setting Time Effects on Bentonite Water-Well Annulus Seals, Fred L. Ogden and James F. Ruff, IR July/Aug. 91, p534-545.

Vertical Leakage in Egypt's Nile Valley: Estimation and Implications, James W. Warner, Timothy K. Gates, Fatma A. R. Attia and Wadie F. Mankarious, IR July/Aug. 91, p515-533.

Ground-water management
SECTAR for Economically Optimal, Sustained Ground-Water Yield Planning, R. C. Peralta, K. Asghari and R. Shulstad, IR Jan./Feb. 91, p5-24.

Ground-water mounding
Method for Determination of Hydraulic Conductivity in Unsaturated Porous Media, Abolfazl Shamsai and Nicholas Sitar, IR Jan./Feb. 91, p64-78.

Ground-water quality
Nitrate Leaching Under Irrigation on Coastal Plain Soil, W. F. Ritter, R. W. Scarborough and A. E. M. Chirnside, IR July/Aug. 91, p490-502.

Grouting
Setting Time Effects on Bentonite Water-Well Annulus Seals, Fred L. Ogden and James F. Ruff, IR July/Aug. 91, p534-545.

Head loss
Design of Rectangular Open-Channel Expansive Transitions, Prabhata K. Swamee and Bharat C. Basak, IR Nov./Dec. 91, p827-838.

Interactive Computer-Aided Design of Inverted Siphons, Pravi Shrestha and Johannes J. DeVries, IR Mar./Apr. 91, p233-254.

Measurement of Irrigation Flows Through Irrigation Turnouts, Ian C. Tod, Mark E. Grismer and Wesley W. Wallender, IR July/Aug. 91, p596-599.

Hydraulic conductivity
Ditch Drainage in Layered Soils, H. C. Sharma, H. S. Chauhan, P. N. Kapoor and Sewa Ram, IR Mar./Apr. 91, p184-200.

Kriging of Hydraulic Conductivity for Subsurface Drainage Design, J. Gallichand, S. O. Prasher, R. S. Broughton and D. Marcotte, IR Sept./Oct. 91, p667-681.

Method for Determination of Hydraulic Conductivity in Unsaturated Porous Media, Abolfazl Shamsai and Nicholas Sitar, IR Jan./Feb. 91, p64-78.

Hydraulic jump
Design of Hydraulic Jump Chambers, Scott F. Korom, Simsek Sarikelle and Andrew L. Simon, IR Mar./Apr. 90, p143-153.

Hydraulic models
Centralized Scheduling Logic for Canal Operation, G. P. Merkley and W. R. Walker, IR May/June 91, p377-393.

Hydraulics
Backwater Curves in Circular Channels, Willi H. Hager, IR Mar./Apr. 91, p173-183.

Direct Solution to Surface Irrigation Advance Inverse Problem, Albert J. Clemmens, IR July/Aug. 91, p578-594.

Drop Manholes in Supercritical Pipelines, George C. Christodoulou, IR Jan./Feb. 91, p37-47.

Hydraulic Characteristics of Circular Flume, Zohrab Samani, Saeed Jorat and Mohammed Yousaf, IR July/Aug. 91, p558-566.

Optimal Design of Parabolic Canals, G. V. Loganathan, IR Sept./Oct. 91, p716-735.

Practical Two-Stage Pipe Expansions for Centrifugal Pumps, Walter L. Trimmer and John A. Fazio, IR Jan./Feb. 91, p91-106.

Roughness Coefficients for Selected Residue Materials, John E. Gilley, Eugene R. Kottwitz and Gary A. Wieman, IR July/Aug. 91, p503-514.

Hydrographs
Response of Muskingum Equation to Step Input, Mohammed Akram Gill, IR July/Aug. 89, p736-738.

Roughness Coefficients for Selected Residue Materials, John E. Gilley, Eugene R. Kottwitz and Gary A. Wieman, IR July/Aug. 91, p503-514.

Hydrologic models
Hydrologic Balance Model Using Neutron Probe Data, Richard H. Cuenca, IR Nov. 88, p644-663.

Hydrology
Precipitation Distributions and Green-Ampt Runoff, J. A. Van Mullem, IR Nov./Dec. 91, p944-959.

Roughness Values for Overland Flow in Subcatchments, S. Y. Liong, S. Selvalingam and D. K. Brady, IR Mar./Apr. 89, p203-214.

Runoff Curve Numbers for Reclaimed Surface Mines in Pennsylvania, John B. Ritter and Thomas W. Gardner, IR Sept./Oct. 91, p656-666.

Simulation of Supplemental Irrigation from On-Farm Ponds, J. G. Arnold and C. O. Stockle, IR May/June 91, p408-424.

Illinois
Irrigation in Midwest: Lessons from Illinois, Jean A. Bowman, F. William Simmons and Brian C. Kimpel, IR Sept./Oct. 91, p700-715.

In situ tests

Method for Determination of Hydraulic Conductivity in Unsaturated Porous Media, Abolfazl Shamsai and Nicholas Sitar, IR Jan./Feb. 91, p64-78.

Infiltration

Direct Solution to Surface Irrigation Advance Inverse Problem, Albert J. Clemmens, IR July/Aug. 91, p578-594.

Infiltration Function from Furrow Stream Advance, William R. DeTar, IR July/Aug. 89, p722-730.

Precipitation Distributions and Green-Ampt Runoff, J. A. Van Mullem, IR Nov./Dec. 91, p944-959.

Simple Regression Procedure for Power Function, J. D. Valiantzas, IR Sept./Oct. 91, p784-790.

Space Solution of Kinematic-Wave Model by Time Iteration, W. W. Wallender and Junji Yokokura, IR Jan./Feb. 91, p140-144.

Infiltration rate

Infiltration Function from Furrow Stream Advance, William R. DeTar, IR July/Aug. 89, p722-730.

Inflow

Response of Muskingum Equation to Step Input, Mohammed Akram Gill, IR July/Aug. 89, p736-738.

Infrared analysis

NOAA Polar-Orbiting Satellite APT Data in Lake Evaporation Estimation, Jian-Nong Xin and Sun F. Shih, IR July/Aug. 91, p547-557.

Input

Response of Muskingum Equation to Step Input, Mohammed Akram Gill, IR July/Aug. 89, p736-738.

International development

Overseas Perspectives for Managing Irrigation Drainage in California, Emery M. Roe, IR May/June 91, p350-360.

Irrigation

Calculation of Distribution and Efficiency for Nonuniform Irrigation, A. W. Warrick, E. Hart and M. Yitayew, IR July/Aug. 89, p674-686.

Development of Low-Discharge Baffle-Sluice Modules, P. K. Mishra, P. Larsen and T. Satyanarayana, IR May/June 90, p444-453.

Drainage of Clay Overlying Artesian Aquifer. I: Hydrologic Assessment, M. E. Grismer and I. C. Tod, IR Mar./Apr. 91, p255-270.

Drainage of Clay Overlying Artesian Aquifer. II: Technical Analysis, I. C. Tod and M. E. Grismer, IR Mar./Apr. 91, p271-284.

Dynamic-Node-Numbering Concept in Channel Network Model, Tahir Husain, Hasin U. Khan and Suhail M. Khan, IR Jan./Feb. 91, p48-63.

Effects of Deficit Irrigation and Irrigation Frequency on Wheat Yields, Marshall English and Brian Nakamura, IR Mar./Apr. 89, p172-184.

FAO-24 Reference Evapotranspiration Factors, Richard G. Allen and William O. Pruitt, IR Sept./Oct. 91, p758-773.

Field Study on Irrigation Delivery Performance, Joel D. Palmer, Albert J. Clemmens and Allen R. Dedrick, IR July/Aug. 91, p567-577.

Hydrologic Balance Model Using Neutron Probe Data, Richard H. Cuenca, IR Nov. 88, p644-663.

Irrigation in Midwest: Lessons from Illinois, Jean A. Bowman, F. William Simmons and Brian C. Kimpel, IR Sept./Oct. 91, p700-715.

Irrigation Uniformity Relationships for Irrigation System Management, Albert J. Clemmens, IR Sept./Oct. 91, p682-699.

Methods of Measuring Pumpage Through Closed-Conduit Irrigation Systems, L. C. Kjelstrom, IR Sept./Oct. 91, p748-757.

Nitrate Leaching Under Irrigation on Coastal Plain Soil, W. F. Ritter, R. W. Scarborough and A. E. M. Chirnside, IR July/Aug. 91, p490-502.

Overseas Perspectives for Managing Irrigation Drainage in California, Emery M. Roe, IR May/June 91, p350-360.

Practical Two-Stage Pipe Expansions for Centrifugal Pumps, Walter L. Trimmer and John A. Fazio, IR Jan./Feb. 91, p91-106.

Problems and Potential of Irrigated Agriculture in Sub-Saharan Africa, Mahmood Alam, IR Mar./Apr. 91, p155-172.

Salt Movement Under Level-Basin Irrigation, D. F. Champion, E. G. Kruse, S. R. Olsen and D. C. Kincaid, IR Sept./Oct. 91, p642-655.

Simulation of Supplemental Irrigation from On-Farm Ponds, J. G. Arnold and C. O. Stockle, IR May/June 91, p408-424.

Irrigation efficiency

Calculation of Distribution and Efficiency for Nonuniform Irrigation, A. W. Warrick, E. Hart and M. Yitayew, IR July/Aug. 89, p674-686.

Development of Low-Discharge Baffle-Sluice Modules, P. K. Mishra, P. Larsen and T. Satyanarayana, IR May/June 90, p444-453.

Importance of Demand Estimation in Irrigation-System Management, Numan Mizyed, Jim Loftis, Ramchand Oad and Alan Early, IR May/June 91, p336-349.

Irrigation of Small-Level Basins in Egypt, Wadie F. Mankarious, Timothy K. Gates and Mohamed A. -H. Rady, IR May/June 91, p361-376.

Measurement of Irrigation Flows Through Irrigation Turnouts, Ian C. Tod, Mark E. Grismer and Wesley W. Wallender, IR July/Aug. 91, p596-599.

Multicriterion Strategic Planning for Improved Irrigation Delivery. I: Approach, Timothy K. Gates, Walter E. Heyder, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p897-913.

Multicriterion Strategic Planning for Improved Irrigation Delivery. II: Application, Walter E. Heyder, Timothy K. Gates, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p914-934.

Systems Analysis of Tank Irrigation: I. Crop Staggering, S. G. Mayya and Rama Prasad, IR May/June 89, p384-405.

Water Management for Lowland Rice Irrigation, Fathima Z. Siddeek, Theo A. Dillaha and G. V. Loganathan, IR Aug. 88, p407-423.

Irrigation engineering

Improved Inverted V-Notch or Chimney Weir, K. Keshava Murthy and D. P. Giridhar, IR May/June 90, p374-386.

Simple Regression Procedure for Power Function, J. D. Valiantzas, IR Sept./Oct. 91, p784-790.

Irrigation practices

Direct Solution to Surface Irrigation Advance Inverse Problem, Albert J. Clemmens, IR July/Aug. 91, p578-594.

Irrigation in Midwest: Lessons from Illinois, Jean A. Bowman, F. William Simmons and Brian C. Kimpel, IR Sept./Oct. 91, p700-715.

Irrigation of Small-Level Basins in Egypt, Wadie F. Mankarious, Timothy K. Gates and Mohamed A. -H. Rady, IR May/June 91, p361-376.

Nitrate Leaching Under Irrigation on Coastal Plain Soil, W. F. Ritter, R. W. Scarborough and A. E. M. Chirnside, IR July/Aug. 91, p490-502.

Simulation of Supplemental Irrigation from On-Farm Ponds, J. G. Arnold and C. O. Stockle, IR May/June 91, p408-424.

Irrigation programs

Problems and Potential of Irrigated Agriculture in Sub-Saharan Africa, Mahmood Alam, IR Mar./Apr. 91, p155-172.

Irrigation scheduling

Centralized Scheduling Logic for Canal Operation, G. P. Merkley and W. R. Walker, IR May/June 91, p377-393.

Effects of Deficit Irrigation and Irrigation Frequency on Wheat Yields, Marshall English and Brian Nakamura, IR Mar./Apr. 89, p172-184.

Field Study on Irrigation Delivery Performance, Joel D. Palmer, Albert J. Clemmens and Allen R. Dedrick, IR July/Aug. 91, p567-577.

Projectwide Water-Order Scheduling by Computer, Brian J. Boman and Charles Higgins, IR May/June 91, p394-407.

Irrigation systems

Design of Irrigation Canals: Integrated Approach, Emad H. Imam, Abdallah S. Bazaraa and Ashraf S. Zaghlool, IR Nov./Dec. 91, p852-869.

Development of Low-Discharge Baffle-Sluice Modules, P. K. Mishra, P. Larsen and T. Satyanarayana, IR May/June 90, p444-453.

Importance of Demand Estimation in Irrigation-System Management, Numan Mizyed, Jim Loftis, Ramchand Oad and Alan Early, IR May/June 91, p336-349.

Subsurface Microirrigation with Effluent, Gideon Oron, Joel DeMalach, Zafrir Hoffman and Rodica Cibotaru, IR Jan./Feb. 91, p25-36.

Irrigation water

Irrigation Uniformity Relationships for Irrigation System Management, Albert J. Clemmens, IR Sept./Oct. 91, p682-699.

Projectwide Water-Order Scheduling by Computer, Brian J. Boman and Charles Higgins, IR May/June 91, p394-407.

Iteration

Space Solution of Kinematic-Wave Model by Time Iteration, W. W. Wallender and Junji Yokokura, IR Jan./Feb. 91, p140-144.

Kinematic wave theory

Fractal Concept Used in Time-of-Concentration Estimates, Gert Aron, James E. Ball and Thomas A. Smith, IR Sept./Oct. 91, p635-641.

Kinematics

Roughness Values for Overland Flow in Subcatchments, S. Y. Liong, S. Selvalingam and D. K. Brady, IR Mar./Apr. 89, p203-214.

Knowledge-based systems

DSS: Dam Site Selector Expert System for Education, Bernard A. Engel and David B. Beasley, IR Sept./Oct. 91, p774-782.

Laboratory tests

Hydraulic Characteristics of Circular Flume, Zohrab Samani, Saeed Jorat and Mohammed Yousaf, IR July/Aug. 91, p558-566.

Local Scour Downstream of Box-Culvert Outlets, H. Abida and R. D. Townsend, IR May/June 91, p425-440.

Lakes

NOAA Polar-Orbiting Satellite APT Data in Lake Evaporation Estimation, Jian-Nong Xin and Sun F. Shih, IR July/Aug. 91, p547-557.

Land reclamation

Runoff Curve Numbers for Reclaimed Surface Mines in Pennsylvania, John B. Ritter and Thomas W. Gardner, IR Sept./Oct. 91, p656-666.

Laplace transform

Response of Muskingum Equation to Step Input, Mohammed Akram Gill, IR July/Aug. 89, p736-738.

Laterals

Discharge Coefficient of Lateral Diversion from Trapezoidal Channel, Hin-Fatt Cheong, IR July/Aug. 91, p461-475.

Leaching

Nitrate Leaching Under Irrigation on Coastal Plain Soil, W. F. Ritter, R. W. Scarborough and A. E. M. Chirnside, IR July/Aug. 91, p490-502.

Salt Movement Under Level-Basin Irrigation, D. F. Champion, E. G. Kruse, S. R. Olsen and D. C. Kincaid, IR Sept./Oct. 91, p642-655.

Leakage

Vertical Leakage in Egypt's Nile Valley: Estimation and Implications, James W. Warner, Timothy K. Gates, Fatma A. R. Attia and Wadie F. Mankarious, IR July/Aug. 91, p515-533.

Least squares method

Practical Land Grading Based on Least Squares, Edmar J. Scaloppi and Lyman S. Willardson, IR May 86, p98-109.

Leveling

Application of Least-Squares Land Leveling, N. A. Gebre-Selassie and L. S. Willardson, IR Nov./Dec. 91, p962-966.

Practical Land Grading Based on Least Squares, Edmar J. Scaloppi and Lyman S. Willardson, IR May 86, p98-109.

Linear programming

Systems Analysis of Tank Irrigation: I. Crop Staggering, S. G. Mayya and Rama Prasad, IR May/June 89, p384-405.

Linearity

Alternative Linear Weir Design, Prabhata K. Swamee, Santosh K. Pathak, Mahesh Agarwal and Anwar S. Ansari, IR May/June 91, p311-323.

Management

Irrigation Uniformity Relationships for Irrigation System Management, Albert J. Clemmens, IR Sept./Oct. 91, p682-699.

Overseas Perspectives for Managing Irrigation Drainage in California, Emery M. Roe, IR May/June 91, p350-360.

Manholes

Drop Manholes in Supercritical Pipelines, George C. Christodoulou, IR Jan./Feb. 91, p37-47.

Mathematical models

Drainage of Clay Overlying Artesian Aquifer. II: Technical Analysis, I. C. Tod and M. E. Grismer, IR Mar./Apr. 91, p271-284.

Optimal Spacing of Tube Wells in Relation to Channel Losses and Lining, Bimal Chandra Mal, IR Sept./Oct. 91, p791-799.

Mathematics

Prediction of Class A Pan Evaporation in Southwest Idaho, Clayton L. Hanson, IR Mar./Apr. 89, p166-171.

Measurement

Hydraulic Characteristics of Circular Flume, Zohrab Samani, Saeed Jorat and Mohammed Yousaf, IR July/Aug. 91, p558-566.

Measuring instruments

Hydraulic Characteristics of Circular Flume, Zohrab Samani, Saeed Jorat and Mohammed Yousaf, IR July/Aug. 91, p558-566.

Methods of Measuring Pumpage Through Closed-Conduit Irrigation Systems, L. C. Kjelstrom, IR Sept./Oct. 91, p748-757.

Microcomputers

Application of Least-Squares Land Leveling, N. A. Gebre-Selassie and L. S. Willardson, IR Nov./Dec. 91, p962-966.

Mines

Runoff Curve Numbers for Reclaimed Surface Mines in Pennsylvania, John B. Ritter and Thomas W. Gardner, IR Sept./Oct. 91, p656-666.

Model verification

Testing of Soil Moisture Prediction Model for Army Land Managers, J. R. Davis, S. M. Cuddy, P. Laut, M. J. Goodspeed and P. A. Whigham, IR July/Aug. 91, p476-489.

Modeling

Calculation of Distribution and Efficiency for Nonuniform Irrigation, A. W. Warrick, E. Hart and M. Yitayew, IR July/Aug. 89, p674-686.

Models

Dynamic-Node-Numbering Concept in Channel Network Model, Tahir Husain, Hasin U. Khan and Suhail M. Khan, IR Jan./Feb. 91, p48-63.

Furrow Geometric Parameters, Thomas J. Trout, IR Sept./Oct. 91, p613-634.

Space Solution of Kinematic-Wave Model by Time Iteration, W. W. Wallender and Junji Yokokura, IR Jan./Feb. 91, p140-144.

Momentum transfer

Discharge Coefficient of Lateral Diversion from Trapezoidal Channel, Hin-Fatt Cheong, IR July/Aug. 91, p461-475.

Multiple purpose structures

Importance of Demand Estimation in Irrigation-System Management, Numan Mizyed, Jim Loftis, Ramchand Oad and Alan Early, IR May/June 91, p336-349.

Nile River Valley

Vertical Leakage in Egypt's Nile Valley: Estimation and Implications, James W. Warner, Timothy K. Gates, Fatma A. R. Attia and Wadie F. Mankarious, IR July/Aug. 91, p515-533.

Nitrates

Drainage-Subirrigation Effect on Water Quality in Georgia Flatwoods, D. L. Thomas, A. Shirmohammadi, R. R. Lowrance and M. C. Smith, IR Jan./Feb. 91, p123-137.

Nitrate Leaching Under Irrigation on Coastal Plain Soil, W. F. Ritter, R. W. Scarborough and A. E. M. Chirnside, IR July/Aug. 91, p490-502.

Nitrogen

Sediment-Related Transport of Nutrients from Southwestern Watersheds, S. M. Bolton, T. J. Ward and R. A. Cole, IR Sept./Oct. 91, p736-747.

Nonlinear analysis

Nonlinear Steady State Seepage into Drains, Salihu Mustafa and N. A. Rafindadi, IR May/June 89, p358-376.

Notches

Improved Inverted V-Notch or Chimney Weir, K. Keshava Murthy and D. P. Giridhar, IR May/June 90, p374-386.

Numerical analysis

Normal-Depth Calculations in Complex Channel Sections, Edward D. Shirley and Vicente L. Lopes, IR Mar./Apr. 91, p220-232.

Numerical models

Design Procedure for Flow Over Side Weirs, Ali Uyumaz and Roger H. Smith, IR Jan./Feb. 91, p79-90.

Numerical Modeling of Two-Dimensional Transient Flow to Ditches, Saleem Ahmad, Deepak Kashyap and B. S. Mathur, IR Nov./Dec. 91, p839-851.

Simple Methods for Predicting Flow to Drains, G. Fipps and R. W. Skaggs, IR Nov./Dec. 91, p881-896.

Space Solution of Kinematic-Wave Model by Time Iteration, W. W. Wallender and Junji Yokokura, IR Jan./Feb. 91, p140-144.

Nutrients

Sediment-Related Transport of Nutrients from Southwestern Watersheds, S. M. Bolton, T. J. Ward and R. A. Cole, IR Sept./Oct. 91, p736-747.

Ohio

Investigation of Precipitation Droughts by Use of Kriging Method, Tiao J. Chang, IR Nov./Dec. 91, p935-943.

Open channel flow

Critical Depth, Velocity Profile, and Channel Shape, R. J. Heggen, IR May/June 91, p442-448.

Normal-Depth Calculations in Complex Channel Sections, Edward D. Shirley and Vicente L. Lopes, IR Mar./Apr. 91, p220-232.

Open Channel Flow Through Transverse Floor Outlets, A. S. Ramamurthy, Duc Minh Tran and L. B. Carballada, IR Mar./Apr. 89, p248-254.

Open channels

Dynamic-Node-Numbering Concept in Channel Network Model, Tahir Husain, Hasin U. Khan and Suhail M. Khan, IR Jan./Feb. 91, p48-63.

Hydraulic Characteristics of Circular Flume, Zohrab Samani, Saeed Jorat and Mohammed Yousaf, IR July/Aug. 91, p558-566.

Openings

Discharge Coefficient of Lateral Diversion from Trapezoidal Channel, Hin-Fatt Cheong, IR July/Aug. 91, p461-475.

Operation

Centralized Scheduling Logic for Canal Operation, G. P. Merkley and W. R. Walker, IR May/June 91, p377-393.

Optimal control methods

Design of Rectangular Open-Channel Expansive Transitions, Prabhata K. Swamee and Bharat C. Basak, IR Nov./Dec. 91, p827-838.

Optimal design

Optimal Design of Parabolic Canals, G. V. Loganathan, IR Sept./Oct. 91, p716-735.

Sensitivity of Furrow Irrigation System Cost and Design Variables, J. Mohan Reddy and Horacio M. Apolayo, IR Mar./Apr. 91, p201-219.

Optimization

Optimal Spacing of Tube Wells in Relation to Channel Losses and Lining, Bimal Chandra Mal, IR Sept./Oct. 91, p791-799.

Optimization models

SECTAR for Economically Optimal, Sustained Ground-Water Yield Planning, R. C. Peralta, K. Asghari and R. Shulstad, IR Jan./Feb. 91, p5-24.

Simulation of Supplemental Irrigation from On-Farm Ponds, J. G. Arnold and C. O. Stockle, IR May/June 91, p408-424.

Outflows

Response of Muskingum Equation to Step Input, Mohammed Akram Gill, IR July/Aug. 89, p736-738.

Overland flow

Fractal Concept Used in Time-of-Concentration Estimates, Gert Aron, James E. Ball and Thomas A. Smith, IR Sept./Oct. 91, p635-641.

Parabolic bodies

Optimal Design of Parabolic Canals, G. V. Loganathan, IR Sept./Oct. 91, p716-735.

Parameters

Simple Regression Procedure for Power Function, J. D. Valiantzas, IR Sept./Oct. 91, p784-790.

Particle size

Dripper-Clogging Factors in Wastewater Irrigation, Avner Adin and Mollie Sacks, IR Nov./Dec. 91, p813-826.

Peak flow

Precipitation Distributions and Green-Ampt Runoff, J. A. Van Mullem, IR Nov./Dec. 91, p944-959.

Pennsylvania

Runoff Curve Numbers for Reclaimed Surface Mines in Pennsylvania, John B. Ritter and Thomas W. Gardner, IR Sept./Oct. 91, p656-666.

Percolation

Drainage of Clay Overlying Artesian Aquifer. I: Hydrologic Assessment, M. E. Grismer and I. C. Tod, IR Mar./Apr. 91, p255-270.

Drainage of Clay Overlying Artesian Aquifer. II: Technical Analysis, I. C. Tod and M. E. Grismer, IR Mar./Apr. 91, p271-284.

Method for Determination of Hydraulic Conductivity in Unsaturated Porous Media, Abolfazl Shamsai and Nicholas Sitar, IR Jan./Feb. 91, p64-78.

Salt Movement Under Level-Basin Irrigation, D. F. Champion, E. G. Kruse, S. R. Olsen and D. C. Kincaid, IR Sept./Oct. 91, p642-655.

Performance evaluation

Field Study on Irrigation Delivery Performance, Joel D. Palmer, Albert J. Clemmens and Allen R. Dedrick, IR July/Aug. 91, p567-577.

Importance of Demand Estimation in Irrigation-System Management, Numan Mizyed, Jim Loftis, Ramchand Oad and Alan Early, IR May/June 91, p336-349.

Permeability

Ditch Drainage in Layered Soils, H. C. Sharma, H. S. Chauhan, P. N. Kapoor and Sewa Ram, IR Mar./Apr. 91, p184-200.

On the Correspondence Between Brooks-Corey and Van Genuchten Models, R. J. Lenhard, J. C. Parker and S. Mishra, IR July/Aug. 89, p744-751.

Permeameters
Method for Determination of Hydraulic Conductivity in Unsaturated Porous Media, Abolfazl Shamsai and Nicholas Sitar, IR Jan./Feb. 91, p64-78.

Phosphorus
Drainage-Subirrigation Effect on Water Quality in Georgia Flatwoods, D. L. Thomas, A. Shirmohammadi, R. R. Lowrance and M. C. Smith, IR Jan./Feb. 91, p123-137.
Sediment-Related Transport of Nutrients from Southwestern Watersheds, S. M. Bolton, T. J. Ward and R. A. Cole, IR Sept./Oct. 91, p736-747.

Pipe flow
Backwater Curves in Circular Channels, Willi H. Hager, IR Mar./Apr. 91, p173-183.
Measurement of Irrigation Flows Through Irrigation Turnouts, Ian C. Tod, Mark E. Grismer and Wesley W. Wallender, IR July/Aug. 91, p596-599.

Pipes
Practical Two-Stage Pipe Expansions for Centrifugal Pumps, Walter L. Trimmer and John A. Fazio, IR Jan./Feb. 91, p91-106.

Piping systems
Setting Time Effects on Bentonite Water-Well Annulus Seals, Fred L. Ogden and James F. Ruff, IR July/Aug. 91, p534-545.

Ponds
Simulation of Supplemental Irrigation from On-Farm Ponds, J. G. Arnold and C. O. Stockle, IR May/June 91, p408-424.

Precipitation
Hydrologic Balance Model Using Neutron Probe Data, Richard H. Cuenca, IR Nov. 88, p644-663.
Investigation of Precipitation Droughts by Use of Kriging Method, Tiao J. Chang, IR Nov./Dec. 91, p935-943.
Precipitation Distributions and Green-Ampt Runoff, J. A. Van Mullem, IR Nov./Dec. 91, p944-959.

Predictions
Prediction of Class A Pan Evaporation in Southwest Idaho, Clayton L. Hanson, IR Mar./Apr. 89, p166-171.

Probes, instruments
Hydrologic Balance Model Using Neutron Probe Data, Richard H. Cuenca, IR Nov. 88, p644-663.

Project management
Problems and Potential of Irrigated Agriculture in Sub-Saharan Africa, Mahmood Alam, IR Mar./Apr. 91, p155-172.

Project planning
Problems and Potential of Irrigated Agriculture in Sub-Saharan Africa, Mahmood Alam, IR Mar./Apr. 91, p155-172.

Puerto Rico
Evapotranspiration Estimation for Data-Short Environment, Sun F. Shih and Ke S. Cheng, IR Jan./Feb. 91, p107-122.

Pumping
Methods of Measuring Pumpage Through Closed-Conduit Irrigation Systems, L. C. Kjelstrom, IR Sept./Oct. 91, p748-757.

Pumps
Practical Two-Stage Pipe Expansions for Centrifugal Pumps, Walter L. Trimmer and John A. Fazio, IR Jan./Feb. 91, p91-106.

Quadratic programming
SECTAR for Economically Optimal, Sustained Ground-Water Yield Planning, R. C. Peralta, K. Asghari and R. Shulstad, IR Jan./Feb. 91, p5-24.

Rainfall
Precipitation Distributions and Green-Ampt Runoff, J. A. Van Mullem, IR Nov./Dec. 91, p944-959.
Sediment-Related Transport of Nutrients from Southwestern Watersheds, S. M. Bolton, T. J. Ward and R. A. Cole, IR Sept./Oct. 91, p736-747.
Simulation Models of Sequences of Dry and Wet Days, J. W. Delleur, T. J. Chang and M. L. Kavvas, IR May/June 89, p344-357.

Rainfall frequency
Simulation Models of Sequences of Dry and Wet Days, J. W. Delleur, T. J. Chang and M. L. Kavvas, IR May/June 89, p344-357.

Reclamation
Dripper-Clogging Factors in Wastewater Irrigation, Avner Adin and Mollie Sacks, IR Nov./Dec. 91, p813-826.

Regional planning
Investigation of Precipitation Droughts by Use of Kriging Method, Tiao J. Chang, IR Nov./Dec. 91, p935-943.

Regression analysis
Simple Regression Procedure for Power Function, J. D. Valiantzas, IR Sept./Oct. 91, p784-790.

Regression models
FAO-24 Reference Evapotranspiration Factors, Richard G. Allen and William O. Pruitt, IR Sept./Oct. 91, p758-773.

Remote sensing
NOAA Polar-Orbiting Satellite APT Data in Lake Evaporation Estimation, Jian-Nong Xin and Sun F. Shih, IR July/Aug. 91, p547-557.

Reservoir storage
Sensitivity of Reservoir Sizing to Evaporation Estimates, K. C. Gan, T. A. McMahon and I. C. O'Neill, IR May/June 91, p324-335.

Reservoirs
Sensitivity of Reservoir Sizing to Evaporation Estimates, K. C. Gan, T. A. McMahon and I. C. O'Neill, IR May/June 91, p324-335.

Retention

On the Correspondence Between Brooks-Corey and Van Genuchten Models, R. J. Lenhard, J. C. Parker and S. Mishra, IR July/Aug. 89, p744-751.

Rice

Water Management for Lowland Rice Irrigation, Fathima Z. Siddeek, Theo A. Dillaha and G. V. Loganathan, IR Aug. 88, p407-423.

Rivers

Investigation of Precipitation Droughts by Use of Kriging Method, Tiao J. Chang, IR Nov./Dec. 91, p935-943.

Roughness

Direct Solution to Surface Irrigation Advance Inverse Problem, Albert J. Clemmens, IR July/Aug. 91, p578-594.

Roughness coefficient

Roughness Coefficients for Selected Residue Materials, John E. Gilley, Eugene R. Kottwitz and Gary A. Wieman, IR July/Aug. 91, p503-514.

Roughness Values for Overland Flow in Subcatchments, S. Y. Liong, S. Selvalingam and D. K. Brady, IR Mar./Apr. 89, p203-214.

Routing

Roughness Values for Overland Flow in Subcatchments, S. Y. Liong, S. Selvalingam and D. K. Brady, IR Mar./Apr. 89, p203-214.

Runoff

Fractal Concept Used in Time-of-Concentration Estimates, Gert Aron, James E. Ball and Thomas A. Smith, IR Sept./Oct. 91, p635-641.

Roughness Values for Overland Flow in Subcatchments, S. Y. Liong, S. Selvalingam and D. K. Brady, IR Mar./Apr. 89, p203-214.

Sediment-Related Transport of Nutrients from Southwestern Watersheds, S. M. Bolton, T. J. Ward and R. A. Cole, IR Sept./Oct. 91, p736-747.

Runoff forecasting

Runoff Curve Numbers for Reclaimed Surface Mines in Pennsylvania, John B. Ritter and Thomas W. Gardner, IR Sept./Oct. 91, p656-666.

Salinity

Agricultural Drainage Water—How Should it be Regulated in California? Stephen K. Hall, William R. Johnston and William J. Miller, IR Jan./Feb. 89, p3-8.

Salt Movement Under Level-Basin Irrigation, D. F. Champion, E. G. Kruse, S. R. Olsen and D. C. Kincaid, IR Sept./Oct. 91, p642-655.

Vertical Leakage in Egypt's Nile Valley: Estimation and Implications, James W. Warner, Timothy K. Gates, Fatma A. R. Attia and Wadie F. Mankarious, IR July/Aug. 91, p515-533.

Salt balance

Salt Movement Under Level-Basin Irrigation, D. F. Champion, E. G. Kruse, S. R. Olsen and D. C. Kincaid, IR Sept./Oct. 91, p642-655.

Sand

Local Scour Downstream of Box-Culvert Outlets, H. Abida and R. D. Townsend, IR May/June 91, p425-440.

Satellites

NOAA Polar-Orbiting Satellite APT Data in Lake Evaporation Estimation, Jian-Nong Xin and Sun F. Shih, IR July/Aug. 91, p547-557.

Saudi Arabia

Dynamic-Node-Numbering Concept in Channel Network Model, Tahir Husain, Hasin U. Khan and Suhail M. Khan, IR Jan./Feb. 91, p48-63.

Scheduling

Centralized Scheduling Logic for Canal Operation, G. P. Merkley and W. R. Walker, IR May/June 91, p377-393.

Dynamic-Node-Numbering Concept in Channel Network Model, Tahir Husain, Hasin U. Khan and Suhail M. Khan, IR Jan./Feb. 91, p48-63.

Projectwide Water-Order Scheduling by Computer, Brian J. Boman and Charles Higgins, IR May/June 91, p394-407.

Scour

Local Scour Downstream of Box-Culvert Outlets, H. Abida and R. D. Townsend, IR May/June 91, p425-440.

Sealing

Setting Time Effects on Bentonite Water-Well Annulus Seals, Fred L. Ogden and James F. Ruff, IR July/Aug. 91, p534-545.

Sediment transport

Interactive Computer-Aided Design of Inverted Siphons, Pravi Shrestha and Johannes J. DeVries, IR Mar./Apr. 91, p233-254.

Seepage

Interactive Computer-Aided Design of Inverted Siphons, Pravi Shrestha and Johannes J. DeVries, IR Mar./Apr. 91, p233-254.

Nonlinear Steady State Seepage into Drains, Salihu Mustafa and N. A. Rafindadi, IR May/June 89, p358-376.

Selenium

Agricultural Drainage Water—How Should it be Regulated in California? Stephen K. Hall, William R. Johnston and William J. Miller, IR Jan./Feb. 89, p3-8.

Sensitivity analysis

Sensitivity of Furrow Irrigation System Cost and Design Variables, J. Mohan Reddy and Horacio M. Apolayo, IR Mar./Apr. 91, p201-219.

Sensitivity of Reservoir Sizing to Evaporation Estimates, K. C. Gan, T. A. McMahon and I. C. O'Neill, IR May/June 91, p324-335.

Sewers

Backwater Curves in Circular Channels, Willi H. Hager, IR Mar./Apr. 91, p173-183.

Shape

Furrow Geometric Parameters, Thomas J. Trout, IR Sept./Oct. 91, p613-634.

Shear tests
Setting Time Effects on Bentonite Water-Well Annulus Seals, Fred L. Ogden and James F. Ruff, IR July/Aug. 91, p534-545.

Simulation
Sediment-Related Transport of Nutrients from Southwestern Watersheds, S. M. Bolton, T. J. Ward and R. A. Cole, IR Sept./Oct. 91, p736-747.

Simulation of Wind-Distorted Sprinkler Patterns, Ido Seginer, Dov Nir and R. D. von Bernuth, IR Mar./Apr. 91, p285-306.

Siphons
Interactive Computer-Aided Design of Inverted Siphons, Pravi Shrestha and Johannes J. DeVries, IR Mar./Apr. 91, p233-254.

Slopes
Surface-Slope Effects on Sprinkler Uniformity, A. A. Soares, L. S. Willardson and J. Keller, IR Nov./Dec. 91, p870-880.

Soil, layered
Ditch Drainage in Layered Soils, H. C. Sharma, H. S. Chauhan, P. N. Kapoor and Sewa Ram, IR Mar./Apr. 91, p184-200.

Soil permeability
On the Correspondence Between Brooks-Corey and Van Genuchten Models, R. J. Lenhard, J. C. Parker and S. Mishra, IR July/Aug. 89, p744-751.

Soil strength
Testing of Soil Moisture Prediction Model for Army Land Managers, J. R. Davis, S. M. Cuddy, P. Laut, M. J. Goodspeed and P. A. Whigham, IR July/Aug. 91, p476-489.

Soil water
Hydrologic Balance Model Using Neutron Probe Data, Richard H. Cuenca, IR Nov. 88, p644-663.

On the Correspondence Between Brooks-Corey and Van Genuchten Models, R. J. Lenhard, J. C. Parker and S. Mishra, IR July/Aug. 89, p744-751.

Simple Regression Procedure for Power Function, J. D. Valiantzas, IR Sept./Oct. 91, p784-790.

Testing of Soil Moisture Prediction Model for Army Land Managers, J. R. Davis, S. M. Cuddy, P. Laut, M. J. Goodspeed and P. A. Whigham, IR July/Aug. 91, p476-489.

Spacing
Optimal Spacing of Tube Wells in Relation to Channel Losses and Lining, Bimal Chandra Mal, IR Sept./Oct. 91, p791-799.

Specific energy
Critical Depth, Velocity Profile, and Channel Shape, R. J. Heggen, IR May/June 91, p442-448.

Discharge Coefficient of Lateral Diversion from Trapezoidal Channel, Hin-Fatt Cheong, IR July/Aug. 91, p461-475.

Sprinkler irrigation
Simulation of Wind-Distorted Sprinkler Patterns, Ido Seginer, Dov Nir and R. D. von Bernuth, IR Mar./Apr. 91, p285-306.

Surface-Slope Effects on Sprinkler Uniformity, A. A. Soares, L. S. Willardson and J. Keller, IR Nov./Dec. 91, p870-880.

Statistical analysis
Kriging of Hydraulic Conductivity for Subsurface Drainage Design, J. Gallichand, S. O. Prasher, R. S. Broughton and D. Marcotte, IR Sept./Oct. 91, p667-681.

Statistical models
Simulation Models of Sequences of Dry and Wet Days, J. W. Delleur, T. J. Chang and M. L. Kavvas, IR May/June 89, p344-357.

Statistics
Simple Regression Procedure for Power Function, J. D. Valiantzas, IR Sept./Oct. 91, p784-790.

Steady flow
Normal-Depth Calculations in Complex Channel Sections, Edward D. Shirley and Vicente L. Lopes, IR Mar./Apr. 91, p220-232.

Steady state
Nonlinear Steady State Seepage into Drains, Salihu Mustafa and N. A. Rafindadi, IR May/June 89, p358-376.

Stilling basins
Design of Hydraulic Jump Chambers, Scott F. Korom, Simsek Sarikelle and Andrew L. Simon, IR Mar./Apr. 90, p143-153.

Stochastic models
Multicriterion Strategic Planning for Improved Irrigation Delivery. I: Approach, Timothy K. Gates, Walter E. Heyder, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p897-913.

Multicriterion Strategic Planning for Improved Irrigation Delivery. II: Application, Walter E. Heyder, Timothy K. Gates, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p914-934.

Storm runoff
Precipitation Distributions and Green-Ampt Runoff, J. A. Van Mullem, IR Nov./Dec. 91, p944-959.

Storm sewers
Drop Manholes in Supercritical Pipelines, George C. Christodoulou, IR Jan./Feb. 91, p37-47.

Strategic planning
Multicriterion Strategic Planning for Improved Irrigation Delivery. I: Approach, Timothy K. Gates, Walter E. Heyder, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p897-913.

Multicriterion Strategic Planning for Improved Irrigation Delivery. II: Application, Walter E. Heyder, Timothy K. Gates, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p914-934.

Stream gaging
Methods of Measuring Pumpage Through Closed-Conduit Irrigation Systems, L. C. Kjelstrom, IR Sept./Oct. 91, p748-757.

Streams

Fractal Concept Used in Time-of-Concentration Estimates, Gert Aron, James E. Ball and Thomas A. Smith, IR Sept./Oct. 91, p635-641.

Open Channel Flow Through Transverse Floor Outlets, A. S. Ramamurthy, Duc Minh Tran and L. B. Carballada, IR Mar./Apr. 89, p248-254.

Subcritical flow

Design of Rectangular Open-Channel Expansive Transitions, Prabhata K. Swamee and Bharat C. Basak, IR Nov./Dec. 91, p827-838.

Open Channel Flow Through Transverse Floor Outlets, A. S. Ramamurthy, Duc Minh Tran and L. B. Carballada, IR Mar./Apr. 89, p248-254.

Subirrigation

Drainage-Subirrigation Effect on Water Quality in Georgia Flatwoods, D. L. Thomas, A. Shirmohammadi, R. R. Lowrance and M. C. Smith, IR Jan./Feb. 91, p123-137.

Subsurface drainage

Ditch Drainage in Layered Soils, H. C. Sharma, H. S. Chauhan, P. N. Kapoor and Sewa Ram, IR Mar./Apr. 91, p184-200.

Kriging of Hydraulic Conductivity for Subsurface Drainage Design, J. Gallichand, S. O. Prasher, R. S. Broughton and D. Marcotte, IR Sept./Oct. 91, p667-681.

Subsurface drains

Drainage of Clay Overlying Artesian Aquifer. I: Hydrologic Assessment, M. E. Grismer and I. C. Tod, IR Mar./Apr. 91, p255-270.

Drainage of Clay Overlying Artesian Aquifer. II: Technical Analysis, I. C. Tod and M. E. Grismer, IR Mar./Apr. 91, p271-284.

Subsurface flow

Subsurface Microirrigation with Effluent, Gideon Oron, Joel DeMalach, Zafrir Hoffman and Rodica Cibotaru, IR Jan./Feb. 91, p25-36.

Supercritical flow

Drop Manholes in Supercritical Pipelines, George C. Christodoulou, IR Jan./Feb. 91, p37-47.

Surface drainage

Practical Land Grading Based on Least Squares, Edmar J. Scaloppi and Lyman S. Willardson, IR May 86, p98-109.

Surface irrigation

Application of Least-Squares Land Leveling, N. A. Gebre-Selassie and L. S. Willardson, IR Nov./Dec. 91, p962-966.

Direct Solution to Surface Irrigation Advance Inverse Problem, Albert J. Clemmens, IR July/Aug. 91, p578-594.

Measurement of Irrigation Flows Through Irrigation Turnouts, Ian C. Tod, Mark E. Grismer and Wesley W. Wallender, IR July/Aug. 91, p596-599.

Practical Land Grading Based on Least Squares, Edmar J. Scaloppi and Lyman S. Willardson, IR May 86, p98-109.

Sensitivity of Furrow Irrigation System Cost and Design Variables, J. Mohan Reddy and Horacio M. Apolayo, IR Mar./Apr. 91, p201-219.

Surface mining

Runoff Curve Numbers for Reclaimed Surface Mines in Pennsylvania, John B. Ritter and Thomas W. Gardner, IR Sept./Oct. 91, p656-666.

Surface runoff

Roughness Coefficients for Selected Residue Materials, John E. Gilley, Eugene R. Kottwitz and Gary A. Wieman, IR July/Aug. 91, p503-514.

Suspended sediments

Sediment-Related Transport of Nutrients from Southwestern Watersheds, S. M. Bolton, T. J. Ward and R. A. Cole, IR Sept./Oct. 91, p736-747.

Swales

Fractal Concept Used in Time-of-Concentration Estimates, Gert Aron, James E. Ball and Thomas A. Smith, IR Sept./Oct. 91, p635-641.

System analysis

Systems Analysis of Tank Irrigation: I. Crop Staggering, S. G. Mayya and Rama Prasad, IR May/June 89, p384-405.

Systems engineering

Sensitivity of Furrow Irrigation System Cost and Design Variables, J. Mohan Reddy and Horacio M. Apolayo, IR Mar./Apr. 91, p201-219.

Tanks

Systems Analysis of Tank Irrigation: I. Crop Staggering, S. G. Mayya and Rama Prasad, IR May/June 89, p384-405.

Temperature effects

Accuracy of Estimated Reference Crop Evapotranspiration, George H. Hargreaves, IR Nov./Dec. 89, p1000-1007.

Testing

Dripper-Clogging Factors in Wastewater Irrigation, Avner Adin and Mollie Sacks, IR Nov./Dec. 91, p813-826.

Transient flow

Numerical Modeling of Two-Dimensional Transient Flow to Ditches, Saleem Ahmad, Deepak Kashyap and B. S. Mathur, IR Nov./Dec. 91, p839-851.

Transition points

Design of Rectangular Open-Channel Expansive Transitions, Prabhata K. Swamee and Bharat C. Basak, IR Nov./Dec. 91, p827-838.

Transport phenomena

Sediment-Related Transport of Nutrients from Southwestern Watersheds, S. M. Bolton, T. J. Ward and R. A. Cole, IR Sept./Oct. 91, p736-747.

Trapezoidal channels

Discharge Coefficient of Lateral Diversion from Trapezoidal Channel, Hin-Fatt Cheong, IR July/Aug. 91, p461-475.

Trickle irrigation

Dripper-Clogging Factors in Wastewater Irrigation, Avner Adin and Mollie Sacks, IR Nov./Dec. 91, p813-826.

Subsurface Microirrigation with Effluent, Gideon Oron, Joel DeMalach, Zafrir Hoffman and Rodica Cibotaru, IR Jan./Feb. 91, p25-36.

Uniformity

Calculation of Distribution and Efficiency for Nonuniform Irrigation, A. W. Warrick, E. Hart and M. Yitayew, IR July/Aug. 89, p674-686.

Irrigation Uniformity Relationships for Irrigation System Management, Albert J. Clemmens, IR Sept./Oct. 91, p682-699.

Surface-Slope Effects on Sprinkler Uniformity, A. A. Soares, L. S. Willardson and J. Keller, IR Nov./Dec. 91, p870-880.

Unsaturated flow

On the Correspondence Between Brooks-Corey and Van Genuchten Models, R. J. Lenhard, J. C. Parker and S. Mishra, IR July/Aug. 89, p744-751.

Urban areas

Drop Manholes in Supercritical Pipelines, George C. Christodoulou, IR Jan./Feb. 91, p37-47.

Velocity

Design of Hydraulic Jump Chambers, Scott F. Korom, Simsek Sarikelle and Andrew L. Simon, IR Mar./Apr. 90, p143-153.

Velocity profile

Critical Depth, Velocity Profile, and Channel Shape, R. J. Heggen, IR May/June 91, p442-448.

Volume measure

Infiltration Function from Furrow Stream Advance, William R. DeTar, IR July/Aug. 89, p722-730.

Water

Calculation of Distribution and Efficiency for Nonuniform Irrigation, A. W. Warrick, E. Hart and M. Yitayew, IR July/Aug. 89, p674-686.

Water balance

Water Management for Lowland Rice Irrigation, Fathima Z. Siddeek, Theo A. Dillaha and G. V. Loganathan, IR Aug. 88, p407-423.

Water demand

Importance of Demand Estimation in Irrigation-System Management, Numan Mizyed, Jim Loftis, Ramchand Oad and Alan Early, IR May/June 91, p336-349.

Projectwide Water-Order Scheduling by Computer, Brian J. Boman and Charles Higgins, IR May/June 91, p394-407.

Water discharge

Improved Inverted V-Notch or Chimney Weir, K. Keshava Murthy and D. P. Giridhar, IR May/June 90, p374-386.

Water distribution

Calculation of Distribution and Efficiency for Nonuniform Irrigation, A. W. Warrick, E. Hart and M. Yitayew, IR July/Aug. 89, p674-686.

Field Study on Irrigation Delivery Performance, Joel D. Palmer, Albert J. Clemmens and Allen R. Dedrick, IR July/Aug. 91, p567-577.

On the Correspondence Between Brooks-Corey and Van Genuchten Models, R. J. Lenhard, J. C. Parker and S. Mishra, IR July/Aug. 89, p744-751.

Simulation of Wind-Distorted Sprinkler Patterns, Ido Seginer, Dov Nir and R. D. von Bernuth, IR Mar./Apr. 91, p285-306.

Surface-Slope Effects on Sprinkler Uniformity, A. A. Soares, L. S. Willardson and J. Keller, IR Nov./Dec. 91, p870-880.

Water flow

Alternative Linear Weir Design, Prabhata K. Swamee, Santosh K. Pathak, Mahesh Agarwal and Anwar S. Ansari, IR May/June 91, p311-323.

Backwater Curves in Circular Channels, Willi H. Hager, IR Mar./Apr. 91, p173-183.

Correction to Parshall Flume Calibrations at Low Discharges, Steven J. Wright and Bahram Taheri, IR Sept./Oct. 91, p800-804.

Methods of Measuring Pumpage Through Closed-Conduit Irrigation Systems, L. C. Kjelstrom, IR Sept./Oct. 91, p748-757.

Practical Two-Stage Pipe Expansions for Centrifugal Pumps, Walter L. Trimmer and John A. Fazio, IR Jan./Feb. 91, p91-106.

Water management

Development of Low-Discharge Baffle-Sluice Modules, P. K. Mishra, P. Larsen and T. Satyanarayana, IR May/June 90, p444-453.

Effects of Deficit Irrigation and Irrigation Frequency on Wheat Yields, Marshall English and Brian Nakamura, IR Mar./Apr. 89, p172-184.

Field Study on Irrigation Delivery Performance, Joel D. Palmer, Albert J. Clemmens and Allen R. Dedrick, IR July/Aug. 91, p567-577.

Methods of Measuring Pumpage Through Closed-Conduit Irrigation Systems, L. C. Kjelstrom, IR Sept./Oct. 91, p748-757.

Water Management for Lowland Rice Irrigation, Fathima Z. Siddeek, Theo A. Dillaha and G. V. Loganathan, IR Aug. 88, p407-423.

Water quality

Drainage-Subirrigation Effect on Water Quality in Georgia Flatwoods, D. L. Thomas, A. Shirmohammadi, R. R. Lowrance and M. C. Smith, IR Jan./Feb. 91, p123-137.

Overseas Perspectives for Managing Irrigation Drainage in California, Emery M. Roe, IR May/June 91, p350-360.

Water resources

Optimal Spacing of Tube Wells in Relation to Channel Losses and Lining, Bimal Chandra Mal, IR Sept./Oct. 91, p791-799.

Water resources management

Irrigation in Midwest: Lessons from Illinois, Jean A. Bowman, F. William Simmons and Brian C. Kimpel, IR Sept./Oct. 91, p700-715.

Irrigation of Small-Level Basins in Egypt, Wadie F. Mankarious, Timothy K. Gates and Mohamed A. -H. Rady, IR May/June 91, p361-376.

Water reuse

Dripper-Clogging Factors in Wastewater Irrigation, Avner Adin and Mollie Sacks, IR Nov./Dec. 91, p813-826.

Water supply systems

Importance of Demand Estimation in Irrigation-System Management, Numan Mizyed, Jim Loftis, Ramchand Oad and Alan Early, IR May/June 91, p336-349.

Multicriterion Strategic Planning for Improved Irrigation Delivery. I: Approach, Timothy K. Gates, Walter E. Heyder, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p897-913.

Multicriterion Strategic Planning for Improved Irrigation Delivery. II: Application, Walter E. Heyder, Timothy K. Gates, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p914-934.

Water surface profiles

Design Procedure for Flow Over Side Weirs, Ali Uyumaz and Roger H. Smith, IR Jan./Feb. 91, p79-90.

Water table

Nonlinear Steady State Seepage into Drains, Salihu Mustafa and N. A. Rafindadi, IR May/June 89, p358-376.

Salt Movement Under Level-Basin Irrigation, D. F. Champion, E. G. Kruse, S. R. Olsen and D. C. Kincaid, IR Sept./Oct. 91, p642-655.

Water temperature

NOAA Polar-Orbiting Satellite APT Data in Lake Evaporation Estimation, Jian-Nong Xin and Sun F. Shih, IR July/Aug. 91, p547-557.

Water tunnels

Backwater Curves in Circular Channels, Willi H. Hager, IR Mar./Apr. 91, p173-183.

Water use

Effects of Deficit Irrigation and Irrigation Frequency on Wheat Yields, Marshall English and Brian Nakamura, IR Mar./Apr. 89, p172-184.

Irrigation in Midwest: Lessons from Illinois, Jean A. Bowman, F. William Simmons and Brian C. Kimpel, IR Sept./Oct. 91, p700-715.

Watersheds

Fractal Concept Used in Time-of-Concentration Estimates, Gert Aron, James E. Ball and Thomas A. Smith, IR Sept./Oct. 91, p635-641.

Prediction of Class A Pan Evaporation in Southwest Idaho, Clayton L. Hanson, IR Mar./Apr. 89, p166-171.

Sediment-Related Transport of Nutrients from Southwestern Watersheds, S. M. Bolton, T. J. Ward and R. A. Cole, IR Sept./Oct. 91, p736-747.

Waves

Roughness Values for Overland Flow in Subcatchments, S. Y. Liong, S. Selvalingam and D. K. Brady, IR Mar./Apr. 89, p203-214.

Weirs

Alternative Linear Weir Design, Prabhata K. Swamee, Santosh K. Pathak, Mahesh Agarwal and Anwar S. Ansari, IR May/June 91, p311-323.

Design Procedure for Flow Over Side Weirs, Ali Uyumaz and Roger H. Smith, IR Jan./Feb. 91, p79-90.

Improved Inverted V-Notch or Chimney Weir, K. Keshava Murthy and D. P. Giridhar, IR May/June 90, p374-386.

Wells

Optimal Spacing of Tube Wells in Relation to Channel Losses and Lining, Bimal Chandra Mal, IR Sept./Oct. 91, p791-799.

Setting Time Effects on Bentonite Water-Well Annulus Seals, Fred L. Ogden and James F. Ruff, IR July/Aug. 91, p534-545.

Wind

Simulation of Wind-Distorted Sprinkler Patterns, Ido Seginer, Dov Nir and R. D. von Bernuth, IR Mar./Apr. 91, p285-306.

AUTHOR INDEX

Abida, H.
Local Scour Downstream of Box-Culvert Outlets, with R. D. Townsend, IR May/June 91, p425-440

Adin, Avner
Dripper-Clogging Factors in Wastewater Irrigation, with Mollie Sacks, IR Nov./Dec. 91, p813-826

Agarwal, Mahesh
see Swamee, Prabhata K., IR May/June 91, p311-323

Ahmad, Saleem
Numerical Modeling of Two-Dimensional Transient Flow to Ditches, with Deepak Kashyap and B. S. Mathur, IR Nov./Dec. 91, p839-851

Ahmed, Nazeer
disc. (of Prediction of Class A Pan Evaporation in Southwest Idaho, by Clayton L. Hanson, IR Mar./Apr. 89, p166-171), IR Jan./Feb. 91, p146-147

Alam, Mahmood
Problems and Potential of Irrigated Agriculture in Sub-Saharan Africa, IR Mar./Apr. 91, p155-172

Allen, Richard G.
FAO-24 Reference Evapotranspiration Factors, with William O. Pruitt, IR Sept./Oct. 91, p758-773

Ansari, Anwar S.
see Swamee, Prabhata K., IR May/June 91, p311-323

Apolayo, Horacio M.
see Reddy, J. Mohan, IR Mar./Apr. 91, p201-219

Arnold, J. G.
Simulation of Supplemental Irrigation from On-Farm Ponds, with C. O. Stockle, IR May/June 91, p408-424

Aron, Gert
Fractal Concept Used in Time-of-Concentration Estimates, with James E. Ball and Thomas A. Smith, IR Sept./Oct. 91, p635-641

Asghari, K.
see Peralta, R. C., IR Jan./Feb. 91, p5-24

Attia, Fatma A. R.
see Warner, James W., IR July/Aug. 91, p515-533

Ball, James E.
see Aron, Gert, IR Sept./Oct. 91, p635-641

Basak, Bharat C.
see Swamee, Prabhata K., IR Nov./Dec. 91, p827-838

Bazaraa, Abdallah S.
see Imam, Emad H., IR Nov./Dec. 91, p852-869

Beasley, David B.
see Engel, Bernard A., IR Sept./Oct. 91, p774-782

Bolton, S. M.
Sediment-Related Transport of Nutrients from Southwestern Watersheds, with T. J. Ward and R. A. Cole, IR Sept./Oct. 91, p736-747

Boman, Brian J.
Projectwide Water-Order Scheduling by Computer, with Charles Higgins, IR May/June 91, p394-407

Bowman, Jean A.
Irrigation in Midwest: Lessons from Illinois, with F. William Simmons and Brian C. Kimpel, IR Sept./Oct. 91, p700-715

Brady, D. K.
see Liong, S. Y., IR Mar./Apr. 89, p203-214

Broughton, R. S.
see Gallichand, J., IR Sept./Oct. 91, p667-681

Carballada, L. B.
see Ramamurthy, A. S., IR Mar./Apr. 89, p248-254

Champion, D. F.
Salt Movement Under Level-Basin Irrigation, with E. G. Kruse, S. R. Olsen and D. C. Kincaid, IR Sept./Oct. 91, p642-655

Chang, T. J.
see Delleur, J. W., IR May/June 89, p344-357

Chang, Tiao J.
Investigation of Precipitation Droughts by Use of Kriging Method, IR Nov./Dec. 91, p935-943

Chauhan, H. S.
see Sharma, H. C., IR Mar./Apr. 91, p184-200

Cheng, Ke S.
see Shih, Sun F., IR Jan./Feb. 91, p107-122

Cheong, Hin-Fatt
Discharge Coefficient of Lateral Diversion from Trapezoidal Channel, IR July/Aug. 91, p461-475

Chiew, Y. M.
disc. (of Roughness Values for Overland Flow in Subcatchments, by S. Y. Liong, S. Selvalingam and D. K. Brady, IR Mar./Apr. 89, p203-214) with S. K. Tan, IR Mar./Apr. 91, p308-309

Chirnside, A. E. M.
see Ritter, W. F., IR July/Aug. 91, p490-502

Christodoulou, George C.
Drop Manholes in Supercritical Pipelines, IR Jan./Feb. 91, p37-47

Cibotaru, Rodica
see Oron, Gideon, IR Jan./Feb. 91, p25-36

Clemmens, Albert J.
Direct Solution to Surface Irrigation Advance Inverse Problem, IR July/Aug. 91, p578-594
Irrigation Uniformity Relationships for Irrigation System Management, IR Sept./Oct. 91, p682-699
see Palmer, Joel D., IR July/Aug. 91, p567-577

Cole, R. A.
see Bolton, S. M., IR Sept./Oct. 91, p736-747

Cuddy, S. M.
see Davis, J. R., IR July/Aug. 91, p476-489

Cuenca, Richard H.
Hydrologic Balance Model Using Neutron Probe Data, IR Nov. 88, p644-663
disc: Fred I. Morton, IR May/June 91, p451-454
clo: IR May/June 91, p454-456

Davis, J. R.
Testing of Soil Moisture Prediction Model for Army Land Managers, with S. M. Cuddy, P. Laut, M. J. Goodspeed and P. A. Whigham, IR July/Aug. 91, p476-489

Dedrick, Allen R.
see Palmer, Joel D., IR July/Aug. 91, p567-577

Delleur, J. W.
Simulation Models of Sequences of Dry and Wet Days, with T. J. Chang and M. L. Kavvas, IR May/June 89, p344-357
disc: Zekâi Şen, IR May/June 91, p457-459
clo: IR May/June 91, p460

DeMalach, Joel
see Oron, Gideon, IR Jan./Feb. 91, p25-36

DeTar, William R.
Infiltration Function from Furrow Stream Advance, IR July/Aug. 89, p722-730
disc: Fadrique Otero, IR Nov./Dec. 91, p974-975

DeVries, Johannes J.
see Shrestha, Pravi, IR Mar./Apr. 91, p233-254

Dillaha, Theo A.
see Siddeek, Fathima Z., IR Aug. 88, p407-423

Early, Alan
see Mizyed, Numan, IR May/June 91, p336-349

Elango, K.
see Indrasenan, N., (disc), IR May/June 89, p384-405

Kumar, C. Nagaraju
see Indrasenan, N., (disc), IR May/June 89, p384-405

Engel, Bernard A.
DSS: Dam Site Selector Expert System for Education, with David B. Beasley, IR Sept./Oct. 91, p774-782

English, Marshall
Effects of Deficit Irrigation and Irrigation Frequency on Wheat Yields, with Brian Nakamura, IR Mar./Apr. 89, p172-184
disc: J. T. Musick, IR Sept./Oct. 91, p806-808

Fazio, John A.
see Trimmer, Walter L., IR Jan./Feb. 91, p91-106

Fippe, G.
Simple Methods for Predicting Flow to Drains, with R. W. Skaggs, IR Nov./Dec. 91, p881-896

Fontane, Darrell G.
see Gates, Timothy K., IR Nov./Dec. 91, p897-913
see Heyder, Walter E., IR Nov./Dec. 91, p914-934

Gallichand, J.
Kriging of Hydraulic Conductivity for Subsurface Drainage Design, with S. O. Prasher, R. S. Broughton and D. Marcotte, IR Sept./Oct. 91, p667-681

Gan, K. C.
Sensitivity of Reservoir Sizing to Evaporation Estimates, with T. A. McMahon and I. C. O'Neill, IR May/June 91, p324-335

Gardner, Thomas W.
see Ritter, John B., IR Sept./Oct. 91, p656-666

Gates, Timothy K.
Multicriterion Strategic Planning for Improved Irrigation Delivery. I: Approach, with Walter E. Heyder, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p897-913
see Heyder, Walter E., IR Nov./Dec. 91, p914-934
see Mankarious, Wadie F., IR May/June 91, p361-376
see Warner, James W., IR July/Aug. 91, p515-533

Gebre-Selassie, N. A.
Application of Least-Squares Land Leveling, with L. S. Willardson, IR Nov./Dec. 91, p962-966

Gill, Mohammed Akram
Response of Muskingum Equation to Step Input, IR July/Aug. 89, p736-738
disc: Muthiah Perumal, IR July/Aug. 91, p605-606
clo: IR July/Aug. 91, p606-607

Gilley, John E.
Roughness Coefficients for Selected Residue Materials, with Eugene R. Kottwitz and Gary A. Wieman, IR July/Aug. 91, p503-514

Giridhar, D. P.
see Murthy, K. Keshava, IR May/June 90, p374-386

Goodspeed, M. J.
see Davis, J. R., IR July/Aug. 91, p476-489

Grismer, M. E.
Drainage of Clay Overlying Artesian Aquifer. I: Hydrologic Assessment, with I. C. Tod, IR Mar./Apr. 91, p255-270
err: IR Sept./Oct. 91, p811
see Tod, I. C., IR Mar./Apr. 91, p271-284

Grismer, Mark E.
see Tod, Ian C., IR July/Aug. 91, p596-599

Hager, Willi H.
Backwater Curves in Circular Channels, IR Mar./Apr. 91, p173-183
disc. (of Design of Hydraulic Jump Chambers, by Scott F. Korom, Simsek Sarikelle and Andrew L. Simon, IR Mar./Apr. 90, p143-153), IR Nov./Dec. 91, p979-980
disc. (of Open Channel Flow Through Transverse Floor Outlets, by A. S. Ramamurthy, Duc Minh Tran and L. B. Carballada, IR Mar./Apr. 89, p248-254), IR Jan./Feb. 91, p148-150

Hall, Stephen K.
Agricultural Drainage Water—How Should it be Regulated in California?, with William R. Johnston and William J. Miller, IR Jan./Feb. 89, p3-8
disc: Arthur F. Pillsbury, IR May/June 91, p456-457

Hanson, Clayton L.
Prediction of Class A Pan Evaporation in Southwest Idaho, IR Mar./Apr. 89, p166-171
disc: Nazeer Ahmed, IR Jan./Feb. 91, p146-147
clo: IR Jan./Feb. 91, p148

Hargreaves, George H.
Accuracy of Estimated Reference Crop Evapotranspiration, IR Nov./Dec. 89, p1000-1007
disc: D. W. Meek and C. J. Phene, IR Nov./Dec. 91, p975-977
clo: IR Nov./Dec. 91, p977-979

Hart, E.
see Warrick, A. W., IR July/Aug. 89, p674-686

Heggen, R. J.
Critical Depth, Velocity Profile, and Channel Shape, IR May/June 91, p442-448

Heyder, Walter E.
Multicriterion Strategic Planning for Improved Irrigation Delivery. II: Application, with Timothy K. Gates, Darrell G. Fontane and Jose D. Salas, IR Nov./Dec. 91, p914-934
see Gates, Timothy K., IR Nov./Dec. 91, p897-913

Higgins, Charles
see Boman, Brian J., IR May/June 91, p394-407

Hoffman, Zafrir
see Oron, Gideon, IR Jan./Feb. 91, p25-36

Husain, Tahir
Dynamic-Node-Numbering Concept in Channel Network Model, with Hasin U. Khan and Suhail M. Khan, IR Jan./Feb. 91, p48-63

Imam, Emad H.
Design of Irrigation Canals: Integrated Approach, with Abdallah S. Bazaraa and Ashraf S. Zaghlool, IR Nov./Dec. 91, p852-869

Indrasenan, N.
disc. (of Systems Analysis of Tank Irrigation: I. Crop Staggering, by S. G. Mayya and Rama Prasad, IR May/June 89, p384-405) with K. Elango and C. Nagaraju Kumar, IR July/Aug. 91, p602-604

Jaynes, Dan B.
disc. (of Calculation of Distribution and Efficiency for Nonuniform Irrigation, by A. W. Warrick, E. Hart and M. Yitayew, IR July/Aug. 89, p674-686), IR Sept./Oct. 91, p808-810

Johnston, William R.
see Hall, Stephen K., IR Jan./Feb. 89, p3-8

Jorat, Saeed
see Samani, Zohrab, IR July/Aug. 91, p558-566

Kapoor, P. N.
see Sharma, H. C., IR Mar./Apr. 91, p184-200

Karamouzis, D.
see Terzidis, George, (disc), IR May/June 89, p358-376

Kashyap, Deepak
see Ahmad, Saleem, IR Nov./Dec. 91, p839-851

Kavvas, M. L.
see Delleur, J. W., IR May/June 89, p344-357

Keller, J.
see Soares, A. A., IR Nov./Dec. 91, p870-880

Khan, Hasin U.
see Husain, Tahir, IR Jan./Feb. 91, p48-63

Khan, Suhail M.
see Husain, Tahir, IR Jan./Feb. 91, p48-63

Kimpel, Brian C.
see Bowman, Jean A., IR Sept./Oct. 91, p700-715

Kincaid, D. C.
see Champion, D. F., IR Sept./Oct. 91, p642-655

Kjelstrom, L. C.
Methods of Measuring Pumpage Through Closed-Conduit Irrigation Systems, IR Sept./Oct. 91, p748-757

Korom, Scott F.
Design of Hydraulic Jump Chambers, with Simsek Sarikelle and Andrew L. Simon, IR Mar./Apr. 90, p143-153
disc: Willi H. Hager, IR Nov./Dec. 91, p979-980
clo: IR Nov./Dec. 91, p980-982

Kottwitz, Eugene R.
see Gilley, John E., IR July/Aug. 91, p503-514

Kruse, E. G.
see Champion, D. F., IR Sept./Oct. 91, p642-655

Larsen, P.
see Mishra, P. K., IR May/June 90, p444-453

Laut, P.
see Davis, J. R., IR July/Aug. 91, p476-489

Lenhard, R. J.
On the Correspondence Between Brooks-Corey and Van Genuchten Models, with J. C. Parker and S. Mishra, IR July/Aug. 89, p744-751
disc: Roger E. Smith, IR July/Aug. 91, p608-610
clo: IR July/Aug. 91, p610-611

Liong, S. Y.
Roughness Values for Overland Flow in Subcatchments, with S. Selvalingam and D. K. Brady, IR Mar./Apr. 89, p203-214
disc: Y. M. Chiew and S. K. Tan, IR Mar./Apr. 91, p308-309
clo: IR Mar./Apr. 91, p309-310

Loftis, Jim
see Mizyed, Numan, IR May/June 91, p336-349

Loganathan, G. V.
Optimal Design of Parabolic Canals, IR Sept./Oct. 91, p716-735
see Siddeek, Fathima Z., IR Aug. 88, p407-423

Lopes, Vicente L.
see Shirley, Edward D., IR Mar./Apr. 91, p220-232

Lowrance, R. R.
see Thomas, D. L., IR Jan./Feb. 91, p123-137

Mal, Bimal Chandra
Optimal Spacing of Tube Wells in Relation to Channel Losses and Lining, IR Sept./Oct. 91, p791-799

Mankarious, Wadie F.
Irrigation of Small-Level Basins in Egypt, with Timothy K. Gates and Mohamed A. -H. Rady, IR May/June 91, p361-376
see Warner, James W., IR July/Aug. 91, p515-533

Marcotte, D.
see Gallichand, J., IR Sept./Oct. 91, p667-681

Mathur, B. S.
see Ahmad, Saleem, IR Nov./Dec. 91, p839-851

Mayya, S. G.
Systems Analysis of Tank Irrigation: I. Crop Staggering, with Rama Prasad, IR May/June 89, p384-405
disc: N. Indrasenan, K. Elango and C. Nagaraju Kumar, IR July/Aug. 91, p602-604
clo: IR July/Aug. 91, p604

McMahon, T. A.
see Gan, K. C., IR May/June 91, p324-335

Meek, D. W.
disc. (of Accuracy of Estimated Reference Crop Evapotranspiration, by George H. Hargreaves, IR Nov./Dec. 89, p1000-1007) with C. J. Phene, IR Nov./Dec. 91, p975-977

Merkley, G. P.
Centralized Scheduling Logic for Canal Operation, with W. R. Walker, IR May/June 91, p377-393

Miller, William J.
see Hall, Stephen K., IR Jan./Feb. 89, p3-8

Mishra, P. K.
Development of Low-Discharge Baffle-Sluice Modules, with P. Larsen and T. Satyanarayana, IR May/June 90, p444-453
err: IR Jan./Feb. 91, p153

Mishra, S.
see Lenhard, R. J., IR July/Aug. 89, p744-751

Mizyed, Numan
Importance of Demand Estimation in Irrigation-System Management, with Jim Loftis, Ramchand Oad and Alan Early, IR May/June 91, p336-349

Moonasingha, Ananda D.
disc. (of Water Management for Lowland Rice Irrigation, by Fathima Z. Siddeek, Theo A. Dillaha and G. V. Loganathan, IR Aug. 88, p407-423), IR May/June 91, p450-451

Morton, Fred I.
disc. (of Hydrologic Balance Model Using Neutron Probe Data, by Richard H. Cuenca, IR Nov. 88, p644-663), IR May/June 91, p451-454

Murthy, K. Keshava
Improved Inverted V-Notch or Chimney Weir, with D. P. Giridhar, IR May/June 90, p374-386
err: IR Sept./Oct. 90, p735
err: IR Jan./Feb. 91, p153-154

Musick, J. T.
disc. (of Effects of Deficit Irrigation and Irrigation Frequency on Wheat Yields, by Marshall English and Brian Nakamura, IR Mar./Apr. 89, p172-184), IR Sept./Oct. 91, p806-808

Mustafa, Salihu
Nonlinear Steady State Seepage into Drains, with N. A. Rafindadi, IR May/June 89, p358-376
disc: George Terzidis and D. Karamouzis, IR Nov./Dec. 91, p968-970
disc: Zekâi Şen, IR Nov./Dec. 91, p970-973
clo: IR Nov./Dec. 91, p973

Nakamura, Brian
see English, Marshall, IR Mar./Apr. 89, p172-184

Nir, Dov
see Seginer, Ido, IR Mar./Apr. 91, p285-306

Oad, Ramchand
see Mizyed, Numan, IR May/June 91, p336-349

Ogden, Fred L.
Setting Time Effects on Bentonite Water-Well Annulus Seals, with James F. Ruff, IR July/Aug. 91, p534-545

Olsen, S. R.
see Champion, D. F., IR Sept./Oct. 91, p642-655

O'Neill, I. C.
see Gan, K. C., IR May/June 91, p324-335

Oron, Gideon
Subsurface Microirrigation with Effluent, with Joel DeMalach, Zafrir Hoffman and Rodica Cibotaru, IR Jan./Feb. 91, p25-36

Otero, Fadrique
disc. (of Infiltration Function from Furrow Stream Advance, by William R. DeTar, IR July/Aug. 89, p722-730), IR Nov./Dec. 91, p974-975

Palmer, Joel D.
Field Study on Irrigation Delivery Performance, with Albert J. Clemmens and Allen R. Dedrick, IR July/Aug. 91, p567-577

Parker, J. C.
see Lenhard, R. J., IR July/Aug. 89, p744-751

Pathak, Santosh K.
see Swamee, Prabhata K., IR May/June 91, p311-323

Peralta, R. C.
SECTAR for Economically Optimal, Sustained Ground-Water Yield Planning, with K. Asghari and R. Shulstad, IR Jan./Feb. 91, p5-24

Perumal, Muthiah
disc. (of Response of Muskingum Equation to Step Input, by Mohammed Akram Gill, IR July/Aug. 89, p736-738), IR July/Aug. 91, p605-606

Phene, C. J.
see Meek, D. W., (disc), IR Nov./Dec. 89, p1000-1007

Pillsbury, Arthur F.
disc. (of Agricultural Drainage Water—How Should it be Regulated in California?, by Stephen K. Hall, William R. Johnston and William J. Miller, IR Jan./Feb. 89, p3-8), IR May/June 91, p456-457

Prasad, Rama
see Mayya, S. G., IR May/June 89, p384-405

Prasher, S. O.
see Gallichand, J., IR Sept./Oct. 91, p667-681

Pruitt, William O.
see Allen, Richard G., IR Sept./Oct. 91, p758-773

Rady, Mohamed A. -H.
see Mankarious, Wadie F., IR May/June 91, p361-376

Rafindadi, N. A.
see Mustafa, Salihu, IR May/June 89, p358-376

Ram, Sewa
see Sharma, H. C., IR Mar./Apr. 91, p184-200

Ramamurthy, A. S.
Open Channel Flow Through Transverse Floor Outlets, with Duc Minh Tran and L. B. Carballada, IR Mar./Apr. 89, p248-254
disc: Willi H. Hager, IR Jan./Feb. 91, p148-150
clo: IR Jan./Feb. 91, p150-151

Reddy, J. Mohan
Sensitivity of Furrow Irrigation System Cost and Design Variables, with Horacio M. Apolayo, IR Mar./Apr. 91, p201-219

Ritter, John B.
Runoff Curve Numbers for Reclaimed Surface Mines in Pennsylvania, with Thomas W. Gardner, IR Sept./Oct. 91, p656-666

Ritter, W. F.
Nitrate Leaching Under Irrigation on Coastal Plain Soil, with R. W. Scarborough and A. E. M. Chirnside, IR July/Aug. 91, p490-502

Roe, Emery M.
Overseas Perspectives for Managing Irrigation Drainage in California, IR May/June 91, p350-360

Ruff, James F.
see Ogden, Fred L., IR July/Aug. 91, p534-545

Sacks, Mollie
see Adin, Avner, IR Nov./Dec. 91, p813-826

Salas, Jose D.
see Gates, Timothy K., IR Nov./Dec. 91, p897-913
see Heyder, Walter E., IR Nov./Dec. 91, p914-934

Samani, Zohrab
Hydraulic Characteristics of Circular Flume, with Saeed Jorat and Mohammed Yousaf, IR July/Aug. 91, p558-566

Sarikelle, Simsek
see Korom, Scott F., IR Mar./Apr. 90, p143-153

Satyanarayana, T.
see Mishra, P. K., IR May/June 90, p444-453

Scaloppi, Edmar J.
Practical Land Grading Based on Least Squares, with Lyman S. Willardson, IR May 86, p98-109
err: IR Nov./Dec. 91, p983

Scarborough, R. W.
see Ritter, W. F., IR July/Aug. 91, p490-502

Seginer, Ido
Simulation of Wind-Distorted Sprinkler Patterns, with Dov Nir and R. D. von Bernuth, IR Mar./Apr. 91, p285-306
err: IR Sept./Oct. 91, p812

Selvalingam, S.
see Liong, S. Y., IR Mar./Apr. 89, p203-214

Sen, Zekâi
disc. (of Nonlinear Steady State Seepage into Drains, by Salihu Mustafa and N. A. Rafindadi, IR May/June 89, p358-376), IR Nov./Dec. 91, p970-973
disc. (of Simulation Models of Sequences of Dry and Wet Days, by J. W. Delleur, T. J. Chang and M. L. Kavvas, IR May/June 89, p344-357), IR May/June 91, p457-459

Shamsai, Abolfazl
Method for Determination of Hydraulic Conductivity in Unsaturated Porous Media, with Nicholas Sitar, IR Jan./Feb. 91, p64-78

Sharma, H. C.
Ditch Drainage in Layered Soils, with H. S. Chauhan, P. N. Kapoor and Sewa Ram, IR Mar./Apr. 91, p184-200

Shih, Sun F.
Evapotranspiration Estimation for Data-Short Environment, with Ke S. Cheng, IR Jan./Feb. 91, p107-122
see Xin, Jian-Nong, IR July/Aug. 91, p547-557

Shirley, Edward D.
Normal-Depth Calculations in Complex Channel Sections, with Vicente L. Lopes, IR Mar./Apr. 91, p220-232

Shirmohammadi, A.
see Thomas, D. L., IR Jan./Feb. 91, p123-137

Shrestha, Pravi
Interactive Computer-Aided Design of Inverted Siphons, with Johannes J. DeVries, IR Mar./Apr. 91, p233-254

Shulstad, R.
see Peralta, R. C., IR Jan./Feb. 91, p5-24

Siddeek, Fathima Z.
Water Management for Lowland Rice Irrigation, with Theo A. Dillaha and G. V. Loganathan, IR Aug. 88, p407-423
disc: Ananda D. Moonasingha, IR May/June 91, p450-451

Simmons, F. William
see Bowman, Jean A., IR Sept./Oct. 91, p700-715

Simon, Andrew L.
see Korom, Scott F., IR Mar./Apr. 90, p143-153

Sitar, Nicholas
see Shamsai, Abolfazl, IR Jan./Feb. 91, p64-78

Skaggs, R. W.
see Fipps, G., IR Nov./Dec. 91, p881-896

Smith, M. C.
see Thomas, D. L., IR Jan./Feb. 91, p123-137

Smith, Roger E.
disc. (of On the Correspondence Between Brooks-Corey and Van Genuchten Models, by R. J. Lenhard, J. C. Parker and S. Mishra, IR July/Aug. 89, p744-751), IR July/Aug. 91, p608-610

Smith, Roger H.
see Uyumaz, Ali, IR Jan./Feb. 91, p79-90

Smith, Thomas A.
see Aron, Gert, IR Sept./Oct. 91, p635-641

Soares, A. A.
Surface-Slope Effects on Sprinkler Uniformity, with L. S. Willardson and J. Keller, IR Nov./Dec. 91, p870-880

Stockle, C. O.
see Arnold, J. G., IR May/June 91, p408-424

Swamee, Prabhata K.
Alternative Linear Weir Design, with Santosh K. Pathak, Mahesh Agarwal and Anwar S. Ansari, IR May/June 91, p311-323
Design of Rectangular Open-Channel Expansive Transitions, with Bharat C. Basak, IR Nov./Dec. 91, p827-838

Taheri, Bahram
see Wright, Steven J., IR Sept./Oct. 91, p800-804

Tan, S. K.
see Chiew, Y. M., (disc), IR Mar./Apr. 89, p203-214

Terzidis, George
disc. (of Nonlinear Steady State Seepage into Drains, by Salihu Mustafa and N. A. Rafindadi, IR May/June 89, p358-376) with D. Karamouzis, IR Nov./Dec. 91, p968-970

Thomas, D. L.
Drainage-Subirrigation Effect on Water Quality in Georgia Flatwoods, with A. Shirmohammadi, R. R. Lowrance and M. C. Smith, IR Jan./Feb. 91, p123-137

Tod, I. C.
Drainage of Clay Overlying Artesian Aquifer. II: Technical Analysis, with M. E. Grismer, IR Mar./Apr. 91, p271-284
see Grismer, M. E., IR Mar./Apr. 91, p255-270

Tod, Ian C.
Measurement of Irrigation Flows Through Irrigation Turnouts, with Mark E. Grismer and Wesley W. Wallender, IR July/Aug. 91, p596-599

Townsend, R. D.
see Abida, H., IR May/June 91, p425-440

Tran, Duc Minh
see Ramamurthy, A. S., IR Mar./Apr. 89, p248-254

Trimmer, Walter L.
Practical Two-Stage Pipe Expansions for Centrifugal Pumps, with John A. Fazio, IR Jan./Feb. 91, p91-106

Trout, Thomas J.
Furrow Geometric Parameters, IR Sept./Oct. 91, p613-634

Uyumaz, Ali
Design Procedure for Flow Over Side Weirs, with Roger H. Smith, IR Jan./Feb. 91, p79-90

Valiantzas, J. D.
Simple Regression Procedure for Power Function, IR Sept./Oct. 91, p784-790

Van Mullem, J. A.
Precipitation Distributions and Green-Ampt Runoff, IR Nov./Dec. 91, p944-959

von Bernuth, R. D.
see Seginer, Ido, IR Mar./Apr. 91, p285-306

Walker, W. R.
see Merkley, G. P., IR May/June 91, p377-393

Wallender, W. W.
Space Solution of Kinematic-Wave Model by Time Iteration, with Junji Yokokura, IR Jan./Feb. 91, p140-144

Wallender, Wesley W.
see Tod, Ian C., IR July/Aug. 91, p596-599

Ward, T. J.
see Bolton, S. M., IR Sept./Oct. 91, p736-747

Warner, James W.
Vertical Leakage in Egypt's Nile Valley: Estimation and Implications, with Timothy K. Gates, Fatma A. R. Attia and Wadie F. Mankarious, IR July/Aug. 91, p515-533

Warrick, A. W.
Calculation of Distribution and Efficiency for Nonuniform Irrigation, with E. Hart and M. Yitayew, IR July/Aug. 89, p674-686
disc: Dan B. Jaynes, IR Sept./Oct. 91, p808-810
clo: IR Sept./Oct. 91, p810

Whigham, P. A.
see Davis, J. R., IR July/Aug. 91, p476-489

Wieman, Gary A.
see Gilley, John E., IR July/Aug. 91, p503-514

Willardson, L. S.
see Gebre-Selassie, N. A., IR Nov./Dec. 91, p962-966
see Soares, A. A., IR Nov./Dec. 91, p870-880

Willardson, Lyman S.
see Scaloppi, Edmar J., IR May 86, p98-109

Wright, Steven J.
Correction to Parshall Flume Calibrations at Low Discharges, with Bahram Taheri, IR Sept./Oct. 91, p800-804

Xin, Jian-Nong
NOAA Polar-Orbiting Satellite APT Data in Lake Evaporation Estimation, with Sun F. Shih, IR July/Aug. 91, p547-557

Yitayew, M.
see Warrick, A. W., IR July/Aug. 89, p674-686

Yokokura, Junji
see Wallender, W. W., IR Jan./Feb. 91, p140-144

Yousaf, Mohammed
see Samani, Zohrab, IR July/Aug. 91, p558-566

Zaghloul, Ashraf S.
see Imam, Emad H., IR Nov./Dec. 91, p852-869